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South African Medical Journal

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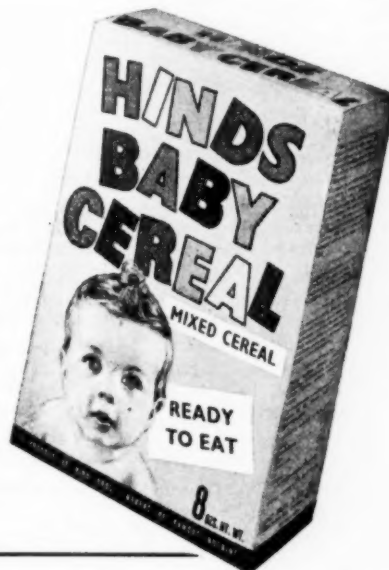
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THE NATURE AND TREATMENT OF TROPHIC PRESSURE SORES

A. T. MATHESON, F.R.C.S. (ENG.)

and

R. LIPSCHITZ, F.R.C.S. (EDIN.)

Department of Surgical Neurology, Baragwanath Hospital, Johannesburg

The development of trophic sores in an analgesic part of the body is a feature of many conditions, medical and surgical. While the vast majority can be prevented by simple methods, the cure of an established, penetrating trophic ulcer is a difficult and taxing problem. Their management merits most careful attention. Experience with paraplegic patients reveals the marked contrast in the maintenance of fair general condition and consequent speedy rehabilitation in those in whom this complication has been avoided and the dreadful, steady, septic deterioration in the untreated or badly treated case.

Our experience is based upon the management of a paraplegic unit of 40 beds. While no fundamentally new principles are iterated, it is felt that—since this is the only such unit in southern Africa—experience gained there could well be applied elsewhere in the country.

PATHOGENESIS

While the vast majority of these lesions occur over the sacral, ischial and trochanteric pressure areas, no area of the body is immune if it is anaesthetic. Regardless of the site, extent or underlying aetiology of the individual lesion, the principles of causation, of prevention and of treatment do not differ.

The so-called bedsore which develops is, in reality, an area of gangrene occurring in an anaesthetic part. The absence of the normal neurogenic component of the inflammatory response alters the nature of the reaction of the tissues to injury or insult. As with gangrene elsewhere, the fundamental cause is local ischaemia. This results from the inter-play of 3 *local factors*:

1. *Sustained local pressure*, which obliterates the local blood supply;

2. *A fall in the blood haemoglobin level*, either as a primary phenomenon associated with the initial injury or disease, or secondary to sepsis. It follows that one bedsore causes sepsis which, in turn, provokes secondary anaemia and a vicious cycle is established. The haemoglobin level may drop as much as 1 g.% per day;

3. *Local stasis*, due to paralysis of muscles and total immobility.

In addition to these local factors, the development of paraplegia is associated with *profound general metabolic disturbances*. Among these, as noted by Walsh (1954) is an immediate rise in the level of serum globulin and a fall in that of serum albumin, and an increase in protein catabolism resulting in a rise in urinary excretion of protein metabolites.

Once ulceration has developed, it passes through a stage of activity and extension followed—if properly treated—by gradual resolution and healing. The process may yield one of 2 forms of chronic lesions, depending upon the extent and depth of the original necrosis, viz. (1) the active extending ulcer and (2) the so-called sinus sore.

The active extending ulcer shows a typical picture of spreading necrosis of skin and subjacent tissues—whether fat, muscle or even bone—with margins which are oedematous and sub-acutely inflamed at first, becoming almost punched-out as activity resolves. The affected skin turns the black colour so typical of gangrene while necrotic deeper tissues form a dirty yellow or grey slough. There is commonly a considerable degree of undermining of deeper tissues beyond the actual limit of skin necrosis.

Healing occurs by slow fibrosis except where, as occurs uncommonly, necrosis has not extended deeper than the epidermis. It is a paradox worthy of note that

a lesion which develops within a few days may take as many months to heal.

Where the necrosis has been more extensive in the superficial than in the deeper tissues, the final result is the formation of a *saucer-shaped defect*. This is most commonly seen over the sacrum. Only the floor of the defect becomes covered by granulation tissue which, in turn, is converted into fibrous tissue. In the course of several weeks this fibrosis becomes dense and tough and comparatively resistant to pressure necrosis, while a thin layer of epithelium grows in from the sides of the defect to cover this fibrotic layer.

Alternatively, superficial necrosis may be limited while the process spreads extensively in the deep tissues, even within bone. The outcome is the so-called *sinus sore*, i.e. a small skin sinus overlying a deep, extensive, often branching cavity. This is the common lesion found over the ischial tuberosities. By the very nature of its pathology, spontaneous cure can never occur.

PREVENTION

The chief factors concerned in prevention are most easily expressed in tabular form:

1. Maintenance of optimal general health and nutrition is essential. Although bed-ridden, such patients must be coaxed to take a very high-calorie, high-protein diet with added vitamins and iron. Tube feeding may be necessary for a time. The mental health being as important as the physical state, the sickest patients should be interspersed among the nearly recovered, and all should be kept profitably occupied. In this regard the work of occupational and physio-therapists cannot be over-stressed.

2. The blood picture must at all times be kept optimal. Regularly repeated blood-counts are necessary and any fall in the haemoglobin level below 15 g.% must be counteracted by immediate transfusion of fresh blood. The quantity of blood administered must be adequate; 2-4 pints per week may be necessary at first. To conserve veins, cut-downs should be avoided. Where allergic responses occur, transfusion of washed cells or the addition of an antihistaminic drug to the drip, should be tried.

3. Any prolonged skin-pressure must be avoided, notably at the sacral, trochanteric, ischial, heel and malleolar areas. The patient is nursed on a foam-rubber mattress laid on a firm base, with additional soft pillows at strategic points. All acute paraplegics, whether the cord lesion is partial or complete, are turned 2-hourly, day and night, from the time of admission; once the acute phase has passed, the frequency of turning may be reduced to 4-hourly. The turning sequence is: back, side, abdomen, other side. In leaner subjects, rings should be applied so as to avoid any direct pressure on bony protruberances; thick orthopaedic felt has been found to be of value for this purpose.

5. Scrupulous hygiene is maintained. The patients should be trained to report any soiling of bed linen, which is changed immediately. The whole body is washed regularly with warm soapy water and the pressure areas are massaged with surgical spirit daily. The use of silicone-base creams as an alternative to

this method—as reported by Bateman (1956)—has proved unsuccessful and has been abandoned as an alternative method of skin care.

6. Heat, in any form, is dangerous. The analgesic skin will not tolerate hot-water bottles, heat lamps or even prolonged exposure to direct sunlight.

7. Regular physiotherapy is commenced as early as possible. Daily passive movements to completely paralysed parts serves to prevent local circulatory stasis.

These simple principles should be available under the most rudimentary conditions. Simple as they are, they must be practiced most punctiliously. Again it must be stressed that prevention is essential, for cure is difficult. Furthermore, there is a strong impression that the early intervention of sepsis—whether from bedsores or any other source—with concomitant secondary anaemia, retards the recovery process of the spinal-cord lesion.

TREATMENT

The development of any skin abrasion or ulcer, however trivial, must be regarded as a matter of grave consequence. Untreated, such small lesions invariably spread in extent and depth at an alarming rate. The patients are, at first, somewhat secretive in this respect, for they know that the development of a minor abrasion necessitates immediate confinement to bed. (Later they come to appreciate the true significance of this complication; in fact, a minor trophic lesion is the commonest reason for rehabilitated paraplegics seeking, and gaining, re-admission.) As a prophylactic measure, one should make a complete visual examination of all patients, including the ambulant ones, once weekly.

Fundamentally, the treatment of all lesions follows exactly the principles laid down for their prevention. The patient is confined to bed absolutely until healing is complete and stable; the general nursing and hygienic regime described is instituted and is maintained strictly until such healing has occurred.

The patient must be nursed in such a position that no pressure whatever is allowed to play upon the affected skin area. With the predominant incidence upon buttock and trochanteric sores, the majority need to be confined to bed in the prone position.

(a) The active, extending ulcer

The basic aim of treatment is a reversal of the factors responsible for the ulceration. The patient is confined strictly to bed and is nursed in a position which avoids any pressure upon the affected area. A mild antiseptic dressing, e.g. gauze soaked in Eusol, is applied locally and is covered with cotton wool. The routine of hygiene and nutrition mentioned above is enforced strictly.

Above all, the blood picture must be maintained at a normal level. The blood haemoglobin is checked twice weekly and any fall below 15 g.% is treated by immediate transfusion of adequate quantities of fresh blood. With extensive ulceration the level may fall as rapidly as 1 g.% daily at first and 2-4 pints of blood may be required weekly for several weeks.

Antibiotics are administered, usually penicillin to

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gether with streptomycin or a sulphonamide in the first instance. A course of 7-14 days is usually adequate, for these drugs have no essential effect upon receding or chronic ulceration.

Once the extent of the slough becomes demarcated, it should be excised freely into healthy tissues. The procedure being a septic one and the affected area anaesthetic, excision may be performed quite conveniently in a side ward. The procedure may have to be repeated.

The method of treatment is unvaried, regardless of the extent of the active ulceration when first seen. With strict application of these measures, it is unusual for the ulceration to extend in the otherwise uncomplicated case.

(b) The healing ulcer

As mentioned above, healing occurs by a process of very slow fibrosis. Throughout the healing process, nursing in a position which completely avoids any pressure of the lesion, is continued. The haemoglobin level is checked regularly. In certain cases, even, where healing is extremely tardy despite a normal or nearly normal blood picture, an occasional transfusion of a pint of fresh blood is of inestimable value.

Two forms of dressing are used, depending upon whether the ulcer is dirty, with exudate and slough, or whether it is covered by clean, dry granulations. Dirty ulcers require Eusol dressings 4 times daily; clean ulcers require simple *tulle-gras* dressings every 3rd or 4th day. The entire affected area is kept covered with several layers of gauze and cotton-wool and standard care of the healthy surrounding skin is observed.

Where the lesion is peripheral, sympathectomy may be of value in accelerating healing. This applies notably to chronic or recurrent pressure-sores on the feet occurring in cauda-equina lesions, where a localized lower lumbar sympathectomy has been found to accelerate healing.

(c) The chronic sinus-sore

This lesion, by its very anatomy, cannot heal spontaneously. Not infrequently the cause of persistence of discharge from the sinus is the presence of infected bone at the depths of the ulcer. The method of treatment, now a fairly standardized procedure, follows the practice of Guttman and his colleagues at Stoke Mandeville. The method is described fully by Walsh (1954).

Briefly, the entire cavity is fully and firmly packed *via* the sinus with ribbon gauze, thereby converting it into an artificial tumour. The tumour is lined by the dense fibrous tissue forming the limits of the original cavity. A fusiform incision is made around the sinus and the tumour is excised by knife or diathermy into healthy tissue on all sides, without entering the gauze pack. Where the cavity extends into bone, any diseased bone is freely curetted away. Absolute haemostasis is affected and primary suture is carried out around a drain. Where the cavity is extensive, the resultant wide skin-flaps should be tethered to the underlying tissues, as described below. Finally a firm pressure-dressing is applied.

Antibiotic cover is given pre-operatively and is maintained for several days thereafter. The drain is removed after 48 hours and the skin sutures after about 10 days. Any accumulation of blood or exudate which forms should be aspirated through a wide-bore needle.

Primary healing is usual. The unhappy alternative is the formation of a far smaller, more localized chronic sinus-sore. This does not tend to extend and may be re-excised in exactly the same way.

(d) The healed scar

This results from an extensive area of fairly superficial necrosis. The saucer-shaped defect becomes covered eventually by a thick and comparatively stable fibrotic scar. Where it is restricted in extent and is removed from any area subject to pressure or friction from sitting, lying or appliances, it may well be left alone. Otherwise, full-thickness skin cover must be obtained.

Experience has shown that the application of split-skin grafts or the swinging of skip flaps has no part whatever to play in the treatment of the vast majority of cases. One should make use of skin immediately surrounding the defect. With healing of the lesion, this tends to become thickened and immobile. Considerable mobilization can be obtained by daily oil-massage, and before proceeding to formal surgery one should nearly be able to cover the defect by simply pushing the supple surrounding mobilized skin over it manually.

The operative procedure, again with antibiotic cover, consists of total excision of the scar up to the margins of healthy skin. The healthy skin and subcutaneous tissue is undercut as widely as is necessary to obtain full cover without tension. Thorough haemostasis is obtained by diathermy coagulation.

The enormous subcutaneous dead-space formed must be obliterated at all costs. This may be done by placing silk sutures midway along each flap, taking a bite of the deep tissue and being tied over small gauze-pads laid on the flap. An additional safeguard is to fix the line of skin suture to the deeper tissues with a few deep mattress-sutures which take a bite of the deeper tissues.

One or more drains are inserted and a firm pressure-dressing is applied. The post-operative care follows the description given above. The importance may be stressed of prompt aspiration of any collection of blood or exudate.

Primary healing occurs in less than half these cases. Disheartening though this is, all is not lost if the wound does break down partly or completely. One may either perform delayed secondary suture, which sometimes succeeds, or allow the defect to proceed to granulation and fibrosis; the resulting defect is far smaller than the original and may be excised and covered in exactly the same way as before.

LOCAL RESULTS

During the first 8 months of 1956, 34 patients were admitted to the paraplegic ward at Baragwanath Hospital. Among these there were 6 deaths, 4 from complete high cervical cord lesions. During the same

period 25 patients were discharged, fully rehabilitated and free of bed sores.

At the time of writing there were 35 patients in the paraplegic ward. Of these 15 were primary admissions, i.e. patients admitted to the unit immediately after the development of paraplegia and consequently treated *ab initio* by the methods described. Only 5 of this group had, or had had, trophic lesions of any kind, namely:

Two developed friction sores over the lateral malleolus from calipers; both are healing. One developed a pressure sore over the right great trochanter; this remained superficial and has started to heal. One had a sinus sore over the left great trochanter, which has been cured by radical excision. One has a healed friction sore in the anal cleft.

The remaining 20 patients were secondary admissions, i.e. patients referred to the unit for further treatment after a shorter or longer period in other surgical units or hospitals. All but one were admitted with bedsores, there being no less than 51 trophic lesions among the 19 patients. The maximum in any one patient was 7 sores and several had 4, 5 or 6 separate lesions. Of these 31 are now completely healed, 20 are healing satisfactorily and none are extending. A considerable back-log of patients requiring radical excision of sinus sores or healed defects over the pressure areas has been built up from this group of patients.

These preliminary figures indicate clearly the scope of the work and the relative success of the regime of prevention and cure described.

SUMMARY

The trophic lesions which develop in anaesthetic areas are a form of gangrene due to local ischaemia. The local and general factors concerned in the initial causation and in the extension of this necrotic process, are described.

Once necrosis commences, it spreads rapidly in extent and depth, unless promptly and properly treated. Healing occurs by very slow fibrosis, forming either a saucer-shaped defect or a chronic sinus-sore, according to the extent of necrosis of the deep tissues.

OFFICIAL ANNOUNCEMENT : AMPTELIKE AANKONDIGING

MEDICAL AID SOCIETIES

The following new Medical Aid Societies were approved by Federal Council at its meeting held at Cape Town on 3-5 October 1956:

1. General Mining (Associated Companies) Medical Aid Society, P.O. Box 1242, Johannesburg.
2. South Atlantic Corporation Medical Aid Society, P.O. Box 4610, Cape Town.

The following names were deleted from the list of approved Medical Aid Societies:

1. Globe Medical Aid Society, Railway Street, Woodstock, C.P.
2. Matabeleland Medical Aid Society, P.O. Box 1776, Bulawayo.
3. Springbok Medical Aid Society, P.O. Box 7614, Johannesburg.

A complete list of approved Medical Aid Societies will appear in the next issue of the *Journal*.

Medical House
Cape Town
10 November 1956

L. M. Marchand
Associate Secretary

The essence of prevention lies in maintaining adequate nutrition and a high blood-haemoglobin, in scrupulous hygiene and care of the skin, and in the prevention of any prolonged local pressure by systematic turning of every acute case.

Cure of commencing or progressing ulceration depends basically upon the strict application of the same principles. Where the end-result is loss of tissue and fibrosis over an area subject to pressure or friction, full-thickness skin cover should be obtained by a relatively simple procedure, which is outlined. Where a chronic sinus-sore forms, it can never heal spontaneously and must be excised radically by the technique developed at the Stoke Mandeville Centre.

Local figures illustrate the rarity of trophic lesions among cases treated in the Baragwanath paraplegic unit from the start, and their great frequency among cases admitted after initial treatment elsewhere. During the first 8 months of 1956, 25 fully rehabilitated paraplegics were discharged from the unit.

SAMEVATTING

Die patologiese proses van trofiese weefselafsterwe en bedseervorming, met verwysing na pasiënte met paraplegie, word behandel. Klem word gelê op voorkoming van die bedseer, en die behandeling, indien eenmaal gevorm, word verduidelik.

Syfers toon aan dat behandeling liefes in spesiaal toegeruste hospitale moet geskied, soos byvoorbeeld die paraplegie-kliniek te Baragwanath Naturelle-hospitaal.

Appreciation is expressed to the Medical Superintendent and to the Senior Surgeon of Baragwanath Hospital for their kind permission to report these findings, and to Dr. D. Hagen for his assistance.

REFERENCES

- Bateman, F. L. A. (1956): *Brit. Med. J.*, **1**, 554.
Guttmann, L. (1953): In *Medical History of the Second World War: Surgery*, pp. 486-496. London: H.M. Stationery Office.
Robinson, R. (1954): *Proc. Roy. Soc. Med.*, **47**, 1109.
Walsh, J. J. (1954): *Ibid.*, **47**, 1116.

MEDIESE HULPVERENIGINGS

Op sy vergadering van 3-5 Oktober te Kaapstad gehou, het die Federale Raad onderstaande nuwe Mediese Hulpverenigings goedgekeur:

1. General Mining (Associated Companies) Medical Aid Society, Posbus 1242, Johannesburg.
2. South Atlantic Corporation Medical Aid Society, Posbus 4610, Kaapstad.

Die volgende name is van die lys van goedgekeurde Mediese Hulpverenigings geskrap:

1. Globe Medical Aid Society, Spoorwegstraat, Woodstock, K.P.
2. Matabeleland Medical Aid Society, Posbus 1776, Bulawayo.
3. Springbok Medical Aid Society, Posbus 7614, Johannesburg.

'n Volledige lys van goedgekeurde verenigings sal in die volgende uitgawe van die *Tydskrif* verskyn.

Mediese Huis
Kaapstad
10 November 1956

L. M. Marchand
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Suid-Afrikaanse Tydskrif vir Geneeskunde

South African Medical Journal

VAN DIE REDAKSIE
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EDITORIAL
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Die skeiding van opgeloste stowwe by wyse van differensiale diffusievermoë deur 'n poreuse vlies wat tussen twee oplossings geplaas is, staan bekend as dialise. Die vlies waardeur dialise kan plaasvind, mag van natuurlike of kunsmatige aard wees; as voorbeelde van eersgenoemde kan die maagdermkanaal of die buikvlies aangehaal word, en van laasgenoemde, die gebruik van sellofaan wat tussen die pasiënt se sirkulerende bloed en die dialiserende oplossing geplaas is.

Die maagdermkanaal is op verskeie verskillende maniere vir dialise gebruik, maar die metode van deursyfering van die dunderm deur 'n dubbelloop Miller-Abbot buis het veral byval gevind, aangesien dit help dat wisseling van opgeloste stowwe betreklik maklik beheer kan word. Die dialiserende oplossing moet sorgvuldig gekies word. Oplossings van natriumchloried mag tot edeem lei, en oplossings van sukrose of dekstrose tot oorhidrering of natrium- en kaliumuitputting. Die vloeistof wat voorkeur geniet het, was 'n 2%-oplossing van natriumsulfaat, wat deurgesyfer is teen 'n spoed en vir 'n tydperk om die individuele pasiënt te pas. Groot hoeveelhede ureum kan op hierdie wyse by uremiese pasiënte verwyder word met weinig gevaar dat ontsmetting hierdeur sal ontstaan. Die vernaamste tegniese moeilikheid mag die inlaat van die buis deur die maaguitgang wees by pasiënte wat aan mislikheid ly.

Die metode van buikvliesdialise is in sommige klinieke gebruik, maar die spesiale tegniese sorg wat dit vereis en die komplikasies wat mag ontstaan, soos byvoorbeeld proteïenverliese, oorhidrering en edeem en buikvliesontsteking, het veroorsaak dat vele werkers uitspoeling van die buikvlies laat vaar het ten gunste van deursyfering van die maagdermkanaal of buite-liggaamlike hemodialise by wyse van 'n kunsmatige nier.

Die eerste metode vir verwydering van stowwe uit die bloed by wyse van uitwendige dialise of vividiffusie, het bestaan uit 'n houer waarin 'n takstelsel van selloidienbuis ingesluit was, wat as dialiserende vlies gedien het. Die verskillende tipes van dialiseerder wat vandag gebruik word, is wysigings van 5 basiese masjiene wat deur Kolff, Alwall, Murray *et al.*, Muirhead en Reid, en Skeggs en Leonard ontwerp is. In die Kolff apparaat word sellofaanbuis om 'n drom gedraai wat in 'n bad met dialiserende oplossing ronddraai; hierdie tipe kunsmatige nier is baie gebruik. In hul besondere apparaat steun Alwall en Murray die sellofaanbuis in 'n taamlike stywe posisie deur middel van draadskerms, wat

The separation of solutes by differential diffusibility through a porous membrane placed between two solutions is known as dialysis. The membrane through which dialysis can take place may be a natural one or artificial; of the former the gastro-intestinal tract or the peritoneum may be cited as examples, and of the latter the use of cellophane placed between the patient's circulating blood and the dialysing solution.

The gastro-intestinal tract has been used for dialysis in several different ways, but the method of perfusion of the small intestine through a double-lumen Miller-Abbott tube has been especially favoured since it enables exchanges of solutes to be relatively easily controlled. The dialysing solution has to be carefully chosen. Solutions of sodium chloride may lead to oedema, and sucrose or dextrose solutions to overhydration or sodium and potassium depletion. The fluid of choice has been a 2% solution of sodium sulphate, perfused at a rate and for a period to suit the individual patient. Large amounts of urea may be removed in this way in uraemic subjects with little danger of introducing infection. The chief technical difficulty may be the introduction of the tube through the pylorus in patients suffering from nausea.

The method of peritoneal dialysis has been used in some clinics, but the special technical care required and the complications that may ensue, such as losses of protein, over-hydration and oedema, and peritonitis, have caused many to give up peritoneal lavage in favour of gastro-intestinal perfusion or extracorporeal haemodialysis by means of an artificial kidney.

The first method for removal of substances from the blood by means of external dialysis, or vividiffusion, consisted of a container enclosing a branched system of celloidin tubes which served as a dialysing membrane. The various types of dialyser in use today are modifications of 5 basic machines devised by Kolff, Alwall, Murray *et al.*, Muirhead and Reid, and Skeggs and Leonard. In the Kolff apparatus cellophane tubing is wound round a drum which revolves in a bath of dialysing solution; this type of artificial kidney has

ultrafiltrasie sowel as dialise moontlik maak. In die kunsmatige nier van Muirhead en Reid word daar van die prinsiep van adsorpsie op ruilingsharpuise gebruik gemaak, maar die metode is nog nie algemeen geëksploreer nie. Skeggs en Leonard het die gebruik van sellofaanbuise laat vaar en sellofaanvelle tussen gegleufde rubberkussings gebruik; sodoende is 'n totaal onbuigbare apparaat ontwikkel, wat ultrafiltrasie sowel as dialise toelaat. Nogtans is hierdie masjien, net soos die ander wat genoem is, deur ander werkers gewysig. In onlangse tipes is die voordele van sellofaanbuise (Kolff) gekombineer met die steun wat totale onbuigbaarheid daaraan verleen (Skeggs-Leonard).

Hierdie kunsmatige nier-masjiene is as navorsings-werktuie gebruik en ook vir die terapeutiese beheer van uitgesoekte gevalle van nierversaking. Hulle veroorloof eksperimentele manipulering van die liggaams-vloeistowwe en die bestudering van stowwe in die bloed, asook die bestudering van die kwantitatiewe tussen-verwantskappe van vloeistowwe en elektroliete, en het nog ander eksperimentele gebruike. Waar hierdie buiteliggaamlike dialiseerders by die behandeling van pasiënte gebruik word, vereis hulle 'n goed-opgeleide span werkers wat slegs beskikbaar is in groter mediese inrigtings waar geskikte geriewe te vind is. Die onder-vinding wat tot dusver opgedoen is, dui aan dat die prosedure veilig is in die hande van ervare werkers. Die apparaat is nie alleen met sukses in burgerlike praktyke gebruik nie, maar ook in die Koreaanse Oorlog deur 'n span werkers van die VSA-leër.

Die kunsmatige nier is 'n waardevolle toevoegsel tot goeie behoudende mediese terapie by die beheer van die oliguriese fase van akute nierversaking en in die behandeling van vergiftiging deur sekere stowwe, soos byvoorbeeld salisilate en barbiturate, wat hulle tot diffusie leen. Die vernaamste aanduiding vir dialise is by akute nierversaking as gevolg van nierbuisnekrose, soos byvoorbeeld hemolitiese reaksie, niertoksiene en skok met anoksie. By chroniese nierversaking moet die aanduidings nog vasgestel word. Enige neiging tot bloeding by 'n pasiënt is 'n teenaanwysing vir die metode, aangesien heparin as stollingsteenmiddel gebruik moet word om aftakking van die bloed toe te laat.

Elkinton, J. R. en Danowski, T. S. (1955): *The Body Fluids*. Londen: Baillière, Tindall en Cox Bpk.
 Battezzati, M. en Taddei, C. (1956): *S. Afr. T. Geneesk.*, **30**, 100.
Symposium on the Artificial Kidney (1956): *Proc. Mayo Clin.*, **31**, 347-373.

been very much used. Alwall and Murray support the cellophane tube in a semi-rigid position by wire screening in their particular apparatus, which is capable of ultrafiltration as well as dialysis. In the artificial kidney of Muirhead and Reid the principle of adsorption onto exchange resins is utilized, but the method has not yet been widely exploited. Skeggs and Leonard abandoned the use of cellophane tubing and used sheets of cellophane between grooved rubber pads; thus a completely rigid apparatus was developed which permits ultrafiltration as well as dialysis. However, this machine, like the others mentioned, has been modified by other workers. In recent types the advantages of cellophane tubing (Kolff) have been combined with complete rigidity of support (Skeggs-Leonard).

These 'artificial kidney' machines have been used as research tools and for the therapeutic management of selected cases of renal failure. They permit experimental manipulation of the body fluids and the study of substances in the blood and of the quantitative interrelationships of fluids and electrolytes, and have other experimental uses. For the treatment of patients the use of these extracorporeal dialysers requires a well-trained team that can only be available in larger medical institutions where facilities are adequate. The experience gained so far indicates that the procedure is safe in the hands of expert operators. The apparatus has been used with success not only in civilian practice but also in the Korean War by a US Army team.

The artificial kidney is a valuable adjunct to good conservative medical therapy in the management of the oliguric phase of acute renal failure and in the treatment of intoxication by certain diffusible substances such as salicylates and barbiturates. The chief indication for dialysis is in acute renal failure due to tubular necrosis, e.g. haemolytic reaction, nephrotoxins, and shock with anoxia. In chronic renal failure the indications remain to be established. Any bleeding tendency in a patient is a contra-indication to the method since heparin has to be used as anticoagulant to permit shunting of the blood.

Elkinton, J. R. and Danowski, T. S. (1955): *The Body Fluids*. Londen: Baillière, Tindall en Cox Ltd.
 Battezzati, M. and Taddei, C. (1956): *S. Afr. Med. J.*, **30**, 100.
Symposium on the Artificial Kidney (1956): *Proc. Mayo Clin.*, **31**, 347-373.

THERMOMETER INFECTION

Dr. I. Mirvish, of Cape Town, has conducted a campaign against the spread of infection amongst hospital patients through clinical thermometers. In 1953 he published a description¹ of a thermometer stand he had devised for use in hospital wards. The stand supports a row of Pyrex test-tubes, in each of which a labelled thermometer rests on cotton-wool in germicidal solution. The tubes are firmly gripped in clips and can readily be removed for boiling or changing of the antiseptic. The tubes are conspicuously labelled with consecutive numbers. For

each patient the bed or cot, the Pyrex tube, and the clinical thermometer, are labelled with the same number to prevent a patient's being given any but his own thermometer.

At the South African Medical Congress in 1955 Mirvish² returned to the charge and reported a bacteriological investigation of the thermometers in use in the wards of a certain general hospital. The thermometers were kept in an antiseptic solution (1 in 1,000 biniodide) supplied by the hospital dispensary and changed at

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varying intervals, usually 2 or 3 times a week; and when tested they had usually been immersed in the solution for about 4 hours. More than a half of the thermometers, both oral and rectal, were found to be infected. In the former the commonest infections detected were viridans streptococci, diphtheroids and coagulase-negative *Micrococcus albus*; in the latter, enterococci and both coagulase-negative and coagulase-positive *M. albus*. Mirvish pointed out the obvious remedies, viz. that each patient should have his own thermometer and that when not in use it should be kept in an effective and suitable germicidal fluid. The thermometer stand was devised to admit of this in hospital wards, where it is generally inadvisable to keep the patient's thermometer at his bedside.

The *Lancet* in a recent editorial³ has discussed this subject and referred to Mirvish's work. The writer of the editorial mentions that in 1941 the Medical Research Council committee on cross-infection in hospitals⁴ recommended that each patient should have a separate thermometer, and says, 'Few nurses or doctors and still

fewer patients will disagree with this advice'. Yet only in a minority of hospitals is provision made for separate thermometers. Throughout Groote Schuur Hospital, Cape Town, Mirvish's apparatus is now in use and every patient has his own thermometer.

Frobisher *et al.*⁵ have found that 1 in 1,000 alcoholic solutions of quaternary ammonium compounds give complete sterilization after 10 minutes' immersion, and that this is more effective if the thermometers are wiped with soapy cotton-wool before being put in the fluid. Mirvish² finds two of these compounds, viz. cetrimide and benzalkonium chloride are non-irritating and non-toxic to raw surfaces.

1. Mirvish, I. (1953): *S. Afr. Med. J.*, **27**, 747.
2. *Idem* (1956): *Ibid.*, **30**, 413.
3. Editorial (1956): *Lancet*, **2**, 559.
4. *The Control of Cross-infection in Hospital* (1944): Med. Res. Coun. War Memo No. 11. London: H.M. Stationery Office. Revised edition 1951.
5. Frobisher, M., Sommermeyer, L. and Blackwell, M. J. (1953): *Appl. Microbiol.*, **1**, 187.

THE INFLUENCE OF CLAUDE BERNARD ON MEDICAL SCIENCE

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In this age, when new scientific discoveries follow one another with such bewildering rapidity, it may help us to retain our sense of proportion if we look back from time to time along the road which medical science has followed. We can learn much from the life and work of the great scientists of the past and it is interesting, in the light of modern knowledge, to assess their influence on the development of scientific medicine.

One of the greatest of medical scientists was the physiologist, Claude Bernard, who lived and worked in France about a hundred years ago. He performed valuable work in many and varied fields of physiology but probably his greatest gift to posterity was his philosophical approach to biology and his clear enunciation of the scope and purpose of physiology.

The science of physiology had evolved from medicine during the 17th and 18th centuries and important physiological facts had been ascertained from experiment by a number of distinguished scientists, including William Harvey and the Rev. Stephen Hales in England, Albrecht von Haller in Switzerland, and Lazzaro Spallanzani in Italy, but there was still a strong tendency to accept traditional beliefs rather than put them to the test of experiment. Bernard's own teacher, François Magendie, believed in the value of experiment but applied experimental methods uncritically to a mass of investigations, with a correspondingly poor return for his efforts. Magendie's contemporary, Johannes Müller, attempted to correlate the branches of knowledge on which physiology depends. In his *Handbook of Physiology* 'the results of comparative anatomy,

chemistry, and physics were for the first time systematically brought to bear on physiological problems'.¹

BERNARD'S LIFE

Before commenting on Claude Bernard's contribution to science it is appropriate to indicate something of his personal history and background.^{2,3} Claude Bernard was born in 1813 in the village of Saint-Julien in the Rhône district of France, where his father owned and worked in a vineyard. Claude was an only son; he had one younger sister. As a child he was taught at first by the local priest and then at a Jesuit College at Villefranche. From there he went to work as a pharmacist's assistant in a suburb of Lyons. Bernard's first experience of pharmacy induced in him a healthy scepticism for medical treatment. A syrup which was dispensed as a cure for all ills, and which the customers found most effective, was compounded of all the spoil and left-over drugs in the shop. One of the young pharmacist's duties at this time was to take drugs for sick animals to the near-by veterinary college, which was one of the first in Europe. He was allowed to linger on this errand and was intensely interested in what he saw and heard at this college.

On his free evenings Bernard frequented the local theatre. Not content with the passive role of spectator he wrote a comedy, *La Rose du Rhône*, which was performed there. Encouraged by this success he proceeded to write a 5-act drama entitled *Arthur de Bretagne*. At the age of 21, armed with the manuscript of this play and with a letter of introduction to M.

Girardin, the deputy Professor of Literature at the Sorbonne, Bernard set off for Paris. Girardin read the manuscript and, finding it lacking in inspiration, advised the young author not to seek his fortune as a playwright but rather to follow up his early training in pharmacy by studying medicine.

Bernard accepted with resignation his literary failure and, as he had been advised to do, entered the Medical School in Paris. He worked hard and lived frugally, supporting himself by school teaching in his spare time. His father died about this time, leaving considerable debts; so Claude had no financial support from his family for his medical training. He was not a brilliant student, except in anatomy, where he showed great skill in dissection. Physiology had not been defined as a science clearly distinct from anatomy, and what physiology was taught was scholastic rather than scientific, the traditional views being repeated without any attempt at experimental investigation.

On the completion of his medical course, Bernard had the good fortune to be appointed *interne* to Magendie, who was Professor of Medicine at the *Collège de France*. Magendie, unlike other physicians of the period, believed in the experimental approach to medicine and had a small research laboratory, where he was studying the function of spinal nerves and the effect of cutting the anterior and posterior nerve roots in experimental animals.^{4,5} Bernard proved so skilful at experimental technique that Magendie employed him as his demonstrator.

Bernard's first scientific publication was a paper on the comparative anatomy and physiology of the chorda tympani.⁶ He found the course and distribution of this nerve very constant in different mammals and he found no chorda tympani in birds or in reptiles. He showed also that the main effect of section of the nerve in dogs is loss of taste sensibility on the corresponding side of the tongue, and he linked this observation with the diminished appreciation of taste often encountered in human facial palsy. This paper was followed in the same year (1843) by a thesis for the Doctorate of Medicine on the subject of gastric juice and its role in nutrition. Thus, from the very beginning of his academic career, Bernard's interests lay in the application of physiology to medical problems.

In 1845 Bernard married Marie Françoise Martin, the daughter of a wealthy physician in Paris. They had 4 children, 2 sons who died in childhood and 2 daughters who outlived their father. The marriage was not a happy one. Mme. Bernard was not only quite uninterested in her husband's intellectual pursuits but actively opposed to the experiments on animals which were a feature of most of his research work.

Domestic difficulties, however, did not impair Bernard's academic activity. In 1847 he was appointed assistant lecturer to Magendie at the *Collège de France*. In 1848 he was elected to membership of the *Académie des Sciences* and was a founder member of the *Société de Biologie*. In the same year he was appointed to a new chair of general physiology created for him at the *Sorbonne*. In 1849 his scientific work received public recognition when he was created *Chevalier* of the *Légion d'honneur*.

The next decade was the most active of Bernard's career. He worked unsparingly at experimental research and teaching and yet found time to take an active part in the meetings of scientific societies. His fame spread, and students from many countries attended his lectures and his demonstrations of experimental technique. His students remarked on the number of phenomena which Bernard demonstrated in the course of experiments, details which nobody else had noticed although they were quite obvious when pointed out. 'He made discoveries as easily as other people breathe.'

In 1853 Bernard was awarded the degree of Doctor of Natural Sciences for a thesis on the glycogenic function of the liver. In 1855 he succeeded Magendie as professor of medicine at the *Collège de France*.

And then in 1860, when 47 years old and at the height of his research career, Bernard's health began to fail. While he contrived to continue his teaching and some other professional commitments, the active experimental research which had been the main interest of his life was interrupted for some years and thereafter was never pursued with the same vigour. During remissions of his illness he did continue some research work; for instance in 1863 he collaborated with Pasteur in experiments on the putrefaction of blood and of urine, but towards the end of that year illness once again compelled him to leave his work and retire to the country, where he had purchased a house in the district where he was born. We have no exact information about the nature of this illness except that he suffered much abdominal pain and recurring attacks of fever. It has been suggested that the lesion was an appendix abscess.

Although Bernard was ill for many years he did not spend the time in idleness. It was during this period that he wrote one of the greatest books in the literature of science, the *Introduction to the Study of Experimental Medicine*.⁸ He also managed to maintain his contacts with scientific societies and to appear at court, where he made a very favourable impression on the Emperor Napoleon III. In subsequent years Bernard used his influence with the Emperor to obtain better research facilities for laboratories throughout the country.

By 1869 Bernard's health was greatly improved and he resumed his teaching and administrative duties with full vigour although he was less active than before in the field of research. At this time in his public life honour after honour was showered upon him but his private life was lonely; after a long period of domestic unhappiness M. and Mme. Bernard had finally parted and the two daughters were living with their mother. In his professional work, from this time on, Bernard's interests became more and more philosophical rather than experimental and his clear intellect was applied as successfully to philosophy as it had been to experimental science. His teaching also was of a high order and he still attracted to his classes gifted young men from many countries who later furthered the cause of science in many fields besides that of pure physiology. In the last year of his life Bernard was still actively teaching and contributing original papers to scientific meetings, and he was engaged in research into the chemical processes involved in fermentation. Bernard realized that fermentation might depend on a soluble

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enzyme, acting outside the cell, and he hoped to find the enzyme.⁹ On his death-bed he said, 'What a pity; it would have been nice to finish it.'^{7*}

Claude Bernard died in the year 1878. He had received many honours during his life and at his death he was mourned as a national hero. Bernard was the first scientist in France to be accorded a state funeral. The funeral orations leave no doubt that he was honoured as a great scientist, and his name is still revered, particularly in his own country.

EXPERIMENTAL RESEARCH

From the year 1843, when he graduated Doctor of Medicine, Bernard devoted himself to research in experimental physiology. He investigated the spinal accessory and vagus nerves^{10, 11} and continued his studies in digestion with an investigation of differences in nutrition and digestion between herbivora and carnivora.¹² His first really important contribution to science arose from this latter investigation and may well be reported in a translation of his own words since these show his ability to follow up chance observation with a logical theory based on the observation and then to proceed to experimental proof of the theory.

'We had observed that when we introduced fat into the stomach of rabbits the fat leaving the stomach was not altered until it had reached a certain distance from the pylorus much lower than the point at which the change took place in dogs. The absorption of fat by the lacteals showed the same difference, for we saw that lacteals containing fat appeared in the rabbit only at a considerable distance from the pylorus, whereas in dogs they appeared at the beginning of the duodenum. When we had confirmed the difference between dogs and rabbits in the site of digestion and absorption of fat it was natural to look for the cause in some special disposition of the intestines. We now noticed that the difference coincided with a difference in the site of entry of pancreatic juice into the intestine. In dogs the pancreatic juice is discharged into the intestine quite close to the pylorus whereas in rabbits the main pancreatic duct opens into the intestine 30 to 35 centimetres below the orifice of the bile duct. It was precisely at this point that the change in the fat occurred and that the lacteals could absorb the fat.'¹³

Bernard cannulated the pancreatic duct of some of his animals in order to collect pure pancreatic juice and he went on to show that this juice emulsified fat and split it into fatty acids and glycerol.¹⁴ He also demonstrated that pancreatic juice converts starch to sugar.¹⁵ The revolutionary nature of these discoveries can be appreciated when we realize that nothing was known before this about digestion in any part of the alimentary canal beyond the stomach.

Although Bernard's experimental investigations were never limited to one theme, his main interest at this time was in liver function. Magendie had shown that starch injected into the veins of a rabbit was rapidly converted to sugar.¹⁶ Bernard and Barreswill demonstrated sugar in liver even when the animals had been fed exclusively on meat.¹⁷ It appeared then that the liver could make sugar and this opened up an entirely new field of physiology. Previously it had been believed that food material could be formed only by plants; animals could not synthesize complex chemical sub-

stances, but could only derive energy from breaking them down.

Bernard set to work to test this theory of formation of sugar by the liver. He starved some dogs and fed others on meat alone; he sampled blood from different veins and found sugar in the blood leaving the liver even when it was not detectable in blood from the mesenteric, pancreatic or splenic veins. Finally he detected sugar in an extract of liver and showed that this sugar had the properties of glucose.¹⁸ In the course of this work he observed that puncture of a particular region of the floor of the fourth ventricle caused sugar to appear in the urine.¹⁹ He went on to show that this glycosuria was associated with hyperglycaemia and he made the correct inference that sugar production in the liver is controlled by the nervous system.²⁰

Bernard continued his investigations on liver function at intervals during the rest of his active life. He found that an excised liver, from which all sugar had been washed out, could still form sugar during the next 24 hours but if the liver were boiled no more sugar was formed.²¹ He later succeeded in isolating the substance from which the sugar was produced and in demonstrating its chemical properties.²² He showed that this substance, which later came to be called glycogen, was formed only by living tissue but could be broken down to sugar, even after death, by the 'ferments' of saliva, of pancreatic juice, or of blood.

In a subsequent investigation Bernard found that the placenta of many mammals contained glycogen, which seemed to be the main source of sugar for the foetus until the liver commenced its glycogenic activity.²³

Another major investigation undertaken while the liver research was still in progress was into the function of vasomotor nerves. Most physiologists of the time were firmly convinced that the blood vessels are incapable of active contraction, but some sympathetic motor nerves had been traced to arteries and a few scientists argued that these must stimulate the smooth muscle of the arteries to contract, in the same way as somatic motor nerves are responsible for the contraction of skeletal muscle. No experimental proof was attempted until Bernard showed that division of the cervical sympathetic on one side in a rabbit resulted in a rise of temperature of that side of the head and neck associated with dilatation of the superficial arteries in the region.²⁴ He did not believe however that the rise in temperature could be attributed entirely to vasodilatation but thought that some local increase in metabolism was involved. Later he showed that electrical stimulation of the upper portion of the divided sympathetic chain reduced the circulation through the blood vessels of the head and neck.²⁵ In another paper he described active dilatation of the blood vessels of the submaxillary gland when the branch of the lingual nerve supplying the gland was stimulated, and he showed that stimulation of the sympathetic nerve-supply caused active constriction of these vessels.²⁶ He concluded that the individual blood-supply of each part of the body is determined by nervous control of its blood vessels.

Bernard also studied the effect of drugs on his experimental animals. He obtained a supply of curare from Brazil and showed that its action was to paralyse motor

* All the quotations from Claude Bernard in this paper are translated from the original French.

nerves, although the muscles themselves still responded to direct stimulation.²⁷ Before this discovery it had been believed that muscle had no inherent power of contraction but was entirely dependent on the nerve fibres supplying it: Bernard demonstrated that curarized muscle is in fact more sensitive than normal muscle to direct stimulation. Working with Pelouze he showed that curare, although not toxic when administered orally, is lethal by parenteral injection even after prolonged incubation with gastric or pancreatic juice. Curare was not absorbed from mucous membranes but was rapidly absorbed from subcutaneous tissue or from the lung.²⁸ That Bernard's imagination was no less vivid for being kept strictly under control is revealed by his comment on poisoning with curare:

'Can one conceive of suffering more horrible than that of a mind aware of the successive withdrawal of all the organs destined to serve it and finding itself buried alive in a corpse?'²⁹

Bernard also demonstrated the pharmacological action of the several alkaloids of opium on experimental animals.³⁰ He came to the conclusion that crude opium, having a very variable action, should be replaced in therapeutics by the alkaloid appropriate to the condition to be treated.

Another fundamental discovery made by Bernard was connected with the mechanism of poisoning with carbon monoxide. It had been accepted only a short time previously that oxygen and carbon dioxide are transported in the blood but it was still quite unknown how this was achieved and it was commonly attributed to simple solution of the gases in plasma. Bernard exposed animals to carbon monoxide and observed that the venous blood became red and would not take up oxygen. He observed also that arterial blood exposed to carbon monoxide gave up oxygen and took up carbon monoxide; this property could be used to ascertain the oxygen content of samples of blood.³¹ From these observations he deduced that carbon monoxide poisoning is due to displacement of oxygen from the erythrocytes by carbon monoxide and he reached the further and much more important conclusion that the oxygen is normally carried in the erythrocytes.

In his last research, on fermentation, Bernard showed that cane sugar is converted to glucose by the action of a soluble enzyme formed by yeast, even when the yeast itself is inactivated by ether.³²

Apart from these major discoveries Bernard made many lesser contributions to medical science in the field of digestion,³³ salivary secretion,³³ and neurology.³⁴ His lectures in the *Collège de France* and at the *Sorbonne* were published in several volumes and these books contained, not only details of his research work, but also the wider picture of the fundamental principles of physiology which were suggested by his experimental findings. Probably the most important general principle which he enunciated was the concept of an internal environment, consisting of the blood and tissue fluids in which the cells inside the body live. According to Bernard, constancy of this internal environment is a condition of free life; in other words higher animals like ourselves are free to move about in a variety of external environments because of carrying with them an unchanging

internal environment in which the vast majority of the body cells are living. As he put it,

'All the vital mechanisms, varied as they are, have only one object, that of keeping constant the conditions of life in the internal environment.'³⁵

PHILOSOPHY

Not content with his numerous publications on various aspects of physiology, Claude Bernard in his later years attempted to analyse the general principles underlying experimental research. During the enforced interruption of experimental work occasioned by his long illness he wrote the book which is now acknowledged to be his masterpiece, *Introduction to the Study of Experimental Medicine*.⁸ The importance of physiology to medicine was not appreciated at the time, and so we find it mentioned again and again in this book; for instance:

'The scientific basis of experimental medicine is physiology . . . without it no medical science is possible.'

The importance of experimental work on animals is stressed:

'It cannot be gainsaid that this is the most delicate and difficult branch of biological investigation: but I deem it the most fruitful and perhaps the most immediately useful for the advancement of experimental medicine.'

The great dispute of the day in physiology was philosophic rather than scientific, between vitalists and mechanists. The vitalists affirmed that life depends not on the same laws as other sciences but on a specific vital force inherent in the living cell and inaccessible to investigation; any attempt to study and explain the phenomena of life would therefore be foredoomed to failure. The mechanists, on the other hand, affirmed that living processes are no different from other physical and chemical phenomena and can be adequately explained in terms of these. Bernard considered such disputes irrelevant; in the *Introduction* he says:

'Experimental medicine, that is physiology, belongs to no medical doctrine and to no philosophic system.'

Bernard expounded the philosophic basis not only of physiology but of science in general. He said:

'Fundamentally all sciences reason in the same way and aim at the same object. They all try to reach knowledge of the law of phenomena so as to foresee, vary or master phenomena.'⁸

To put it another way, the value of science to mankind depends on the power it gives us to foretell future events and to control some of these events.

Bernard described very clearly the fundamental method involved in the scientific approach to a problem:

'The true scientist is one whose work includes both experimental theory and experimental practice. (1) He notes a fact; (2) apropos of this fact an idea is born in his mind; (3) in the light of this idea he reasons, devises an experiment, and imagines and brings to pass its material conditions; (4) from this experiment new phenomena result which must be observed, and so on and so forth. The mind of a scientist is always placed, as it were, between two observations: one which serves as starting-point for reasoning, and the other which serves as conclusion.'⁸

Science depends on the formulation of theories, not on dogma, and the scientist must keep an open mind,

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especially on his own favourite theories. As Bernard puts it:

'In science indeed we must not only try to criticise others but every man of science must always be a severe critic of himself. Whenever he proffers an opinion or proposes a theory he must be the first to try to control it by criticism and to base it on well observed and accurately determined facts.'¹⁸

That Bernard realised the limitations of the experimental approach is shown by another passage from the same book:

'The nature of our mind leads us to seek the essence or the why of things. Thus we aim beyond the goal that it is given us to reach; for experience soon teaches us that we cannot get beyond the how.'¹⁹

In his book, *Experimental Science*, published in the last year of his life, Bernard says:

'Philosophy represents the eternal aspiration of the human mind to understand the unknown.'²⁰

Science, according to Bernard, is concerned with the known and the knowable but not with truths which cannot be submitted to the test of experiment. In his view the function of an experimenter is to influence matter, animate or inanimate, by providing the conditions under which the desired reactions will take place. The object of experiment is to find these conditions and to observe the reactions.²¹

One subject on which Bernard's view differs radically from that of most modern scientists is statistics. Bernard held a very low opinion of the value of statistics, a view which was probably justified by the very imperfect statistical methods practised at the time. Also he saw no advantage for medical science in the establishment of laws of probability, which give no information about the particular case.

CONCLUSIONS

In retrospect we see that many of the physiological concepts now incorporated in medical science are attributable in the first instance to Claude Bernard. These include the processes of digestion and absorption in the small intestine, the formation of glycogen in the liver and its utilization, the nervous control of blood vessels and of salivary secretion, the pharmacology of a number of important drugs, the mechanism of gas transport by the blood, and the nature and significance of the 'internal environment' of the cells of the body.

What were the qualities which made Bernard great? I think these were an alert imagination and thoroughness in carrying out the ideas which this suggested to him. We all notice things we are looking for and fail to observe things we are not looking for or do not know about, but it is given to only a few gifted individuals like Bernard to notice unexpected details and to follow up such chance observations with thorough, planned

investigation. Bernard was thorough; the second-best was never good enough for him. His observations were meticulously accurate and the conclusions he drew from them were careful and critical. It was never enough merely to observe; he had to look beneath the surface of individual results for the fundamental principles on which they depended.

Not only was Bernard a brilliant experimental scientist but he also gave clear expression to the principles on which he and other scientists should work. Not only physiology but science as a whole owes him a great debt.

REFERENCES

1. Singer, C. (1950): *A History of Biology*, revised ed., p. 388 New York: Henry Schuman.
2. Foster, M. (1899): *Claude Bernard*. London: T. Fisher Unwin.
3. Olmsted, J. M. D. (1939): *Claude Bernard: Physiologist*. London: Cassell.
4. Magendie, F. (1822): *J. Physiol. expér. Path.*, **2**, 276.
5. *Idem: Ibid.*, **2**, 366.
6. Bernard, C. (1843): *Ann. méd.-psychol.*, **1**, 408.
7. Bert, P. (1878): *Claude Bernard*, Introductory chapter in Bernard, C., *op. cit.*²²
8. Bernard, C. (1865): *Introduction à l'Étude de la Médecine expérimentale*. English translation by Greene, H. L. (1949). New York: Macmillan Co.
9. Berthelot, M. (1878): *Rev. scient.*, **15**, 49.
10. Bernard, C. (1844): *Arch. gén. Méd.*, **4**, 397. Quoted by Olmsted, J. M. D., *op. cit.*³
11. *Idem: Ibid.*, **5**, 51.
12. *Idem* (1846): *C.R. Acad. Sci. (Paris)*, **22**, 534.
13. *Idem* (1856): *Leçons de Physiologie Expérimentale*, vol. II p. 179. Paris: Baillière.
14. *Idem* (1849): *C.R. Soc. Biol. (Paris)*, **1**, 99.
15. *Idem* (1849): *C.R. Acad. Sci. (Paris)*, **28**, 249.
16. Magendie, F. (1846): *Ibid.*, **23**, 189.
17. Bernard, C. and Barreswill, C. (1848): *Ibid.*, **27**, 514.
18. Bernard, C. (1849): *C.R. Soc. Biol. (Paris)*, **1**, 121.
19. *Idem: Ibid.*, **1**, 60.
20. *Idem* (1850): *C.R. Acad. Sci. (Paris)*, **31**, 571.
21. *Idem* (1855): *Ibid.*, **41**, 461.
22. *Idem* (1857): *C.R. Soc. Biol. (Paris)*, **9**, 1.
23. *Idem* (1859): *C.R. Acad. Sci. (Paris)*, **48**, 77.
24. *Idem* (1852): *Ibid.*, **34**, 472.
25. *Idem* (1852): *C.R. Soc. Biol. (Paris)*, **4**, 168.
26. *Idem* (1858): *C.R. Acad. Sci. (Paris)*, **47**, 245.
27. *Idem* (1857): *Leçons sur les Effets des Substances Toxiques et Médicamenteuses*, p. 465. Paris: Baillière.
28. Pelouze, T. J. and Bernard, C. (1850): *C.R. Acad. Sci. (Paris)*, **31**, 533.
29. Bernard, C. (1878): *La Science Expérimentale*. Paris: Baillière.
30. *Idem* (1864): *C.R. Acad. Sci. (Paris)*, **59**, 406.
31. *Idem* (1858): *Ibid.*, **47**, 393.
32. *Idem* (1856): *Mémoire sur le pancréas et sur le rôle du suc pancréatique dans les phénomènes digestifs, particulièrement dans la digestion des matières grasses neutres*. Quoted by Olmsted, J. M. D., *op. cit.*³
33. *Idem* (1852): *C.R. Acad. Sci. (Paris)*, **34**, 236.
34. *Idem* (1858): *Leçons sur la Physiologie et la Pathologie du Système Nerveux*, pp. 381-382. Paris: Baillière.
35. *Idem* (1878): *Leçons sur les Phénomènes de la Vie Communs aux Animaux et aux Végétaux*, p. 121. Paris: Baillière.

UNION DEPARTMENT OF HEALTH BULLETIN

Union Department of Health Bulletin. Report for the 7 days ended 1 November 1956.

Plague, Smallpox: Nil.

Typhus Fever: One (1) of the 3 Native cases in the Cradock district reported in Bulletin No. 43 has been found by laboratory tests to be negative. One (1) Native case in the Queenstown location has been confirmed by laboratory tests as positive. One (1) Native case in the Middelburg district (Cape) and one (1)

Native case in the Cradock district. Diagnosis based on clinical grounds only.

Epidemic Diseases in Other Countries.

Plague: Nil.

Cholera in Chalna (Pakistan).

Smallpox in Calcutta, Delhi, Karikal, Madras, Pondicherry, Tuticorin, Visakhapatnam (India); Baghdad, Mosul (Iraq); Nairobi (Kenya).

Typhus Fever in Baghdad (Iraq).

THE CAPE TOWN OBSTETRIC FLYING SQUAD*

ITS INCEPTION, ORGANIZATION AND OPERATION

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In a country with adequate medical services there should be no need for an obstetric emergency unit, since in ideal circumstances every woman would be delivered of her child in a hospital. Disaster may strike at any time in labour. Delay in adequate treatment before transportation to hospital may well mean the difference between life and death.

A strong link exists between the obstetric emergency service and the University of Cape Town. The equipment was purchased by funds donated by the students' Hospital Rag committee. The service operates from, and admits to, hospitals which are attached to the medical faculty of the University. Senior medical students form an integral part of the unit, thus not only performing a useful function but also benefiting from a unique opportunity of seeing and studying the hazards of childbirth in patients who have not, in most cases, received antenatal care.

INCEPTION AND ORGANIZATION

In the 1920s and '30s, and before, many obstetrical and gynaecological procedures were carried out with relatively good results, in the patients' homes by the medical staff of district maternity services in England and Ireland. In the USA, as far back as the last decade of the 19th century, Joseph de Lee in his Chicago Maternity Centre was taking competent obstetric help, not only to his 'booked' cases, but to anyone who called for help. His work was carried on by Beatrice Tucker

* From a paper read at the South African Obstetrical and Gynaecological Congress, Durban, July 1956.

in a foundation whose finances were so slender during the depression years that the most urgent call had to be answered by a team travelling to the patient in a street car. In the UK the emergency obstetrical service, or 'flying squad', operated by an obstetric unit on an organized basis was initiated by the Newcastle-on-Tyne unit in 1935, by Farquhar Murray. Stabler¹ (1947), reviewing the activities of that service over 12 years, emphasized and brought to light the potentialities of emergency obstetric treatment in the home and showed that this service provided an indispensable means of providing the necessary treatment on the spot or rendering the patient fit to travel to hospital.

The Cape Peninsula provides a unique testing ground for the activities of an emergency obstetric unit; the beds available for routine and emergency obstetric care are grossly inadequate, and a large proportion of the population is not aware of the advantages of competent ante-partum and intra-partum care, which, moreover, is not always attainable. After many setbacks, the 'flying squad' answered its first call in September 1953.

The unit covers the whole of the Cape Peninsula and surrounding areas, and is available for any case on the district service of the Peninsula Maternity Hospital or the associated teaching hospitals. This, however, forms only a small part of the work of the unit. Any doctor or midwife faced with an obstetrical emergency may call on the services of the flying squad by telephoning the Peninsula Maternity Hospital, from which the unit operates. In the 33 months under review the squad has attended to 12 patients in private



Fig. 1. Total equipment carried by the unit.

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nursing homes or hospitals. No call, where the case falls under the category of cases normally handled by the unit, is ever refused.

Equipment

The equipment is housed at the Peninsula Maternity Hospital and there are 3 separate and complete sets, so that even if emergency calls come in rapid succession they may be answered. The equipment carried is detailed below:

Large wooden box, with folding lid, 2 sterile drums, blankets and hot-water bottles, headlight and battery. Blood-transfusion equipment as supplied by the Western Province Blood Transfusion Society. Collapsible centrifuge, telescopic drip-stand, 4 tins or more containing ice to carry the blood, and box containing laboratory requirements. The total equipment is shown in Fig. 1.

BOX

- | | |
|-------------------------------------------------------------------|-------------------------------|
| Jar containing scalpel blades and 2 needles in Dettol (each kind) | 1 Bottle Acriflavine emulsion |
| 2 Cheatle forceps | 1 Bottle sterile water |
| 1 Vacoliter normal saline | 1 Bottle anaesthetic ether |
| 1 Vacoliter dextrose 5% in water | 1 Bottle cleansing ether |
| 1 Bottle pure Dettol | 1 Bottle Procaine 2% |
| 1 Bottle Dettol cream | 1 glass measure |

The box is closed with two lids, each containing equipment.

LID 1

- | | |
|----------------------|------------------------|
| Ampoules of Coramine | Calcium gluconate |
| Ephedrine | Haemoklot |
| Amyl nitrate | Sodium citrate |
| Ergometrine 0.5 mg. | Pentothal sodium |
| Pitocin 5 units | Sterile water ampoules |
| Pituitrin 10 units | Atropine gr. 1/100 |
| Vitamine K. 10 mg. | Noradrenaline |

LID 2

- | | |
|--------------------|------------------------|
| 3 Cotton bandages | 1 Brush |
| 1 Crepe bandage | 1 Soap and box |
| 1 Adhesive plaster | 1 Pair Cheatle Forceps |
| 1 Splint | 1 Lotion thermometer |
| 1 Sandbag | 1 Clinical thermometer |
| 1 Baumanometer | |

BAG

- | | |
|--------------------|------------------|
| 1 Anaesthetic mask | 1 Tongue forceps |
| 2 Face pieces | 1 Airway |
| 1 Dropper | 4 Masks |
| 1 Mouth gag | |

LARGE DRUM

- | | | |
|-------------------|-----------------------------------|------------------------|
| 2 Gowns | 1 Pair packing forceps | } <i>On Safety Pin</i> |
| 6 Dressing towels | 2 Pairs scissors | |
| 3 Dressing Macks. | 1 Pair toothed dissecting forceps | |
| Wool swabs | 4 Towel clips | |
| 2 Gauze packings | 1 Long artery forceps | |
| Gauze swabs | 1 Speculum | |
| 2 Receivers | 1 Plain dissecting forceps | |
| 2 Bowls | Needles | |
| 1 20 c.c. syringe | | |
| 2 2 c.c. syringes | | |

SMALL DRUM (rubber requisites)

- | | |
|---------------------------------------------------------------|---------------------------------------|
| 1 Douche can—complete with tubing, clip and nozzle | 1 I.V. blood-giving set |
| 3 Pairs gloves—sizes 8, 7½ and 7, with small towel for drying | 1 Mucus catheter |
| | 2 Catheters and cord ligature in bag. |

LOOSE EQUIPMENT

- | | |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------|
| 1 Tin containing blood-taking set | 1 Blanket pack, with 3 hot-water bottles each, which must be filled and inserted into pack at time of call. |
| 1 Centrifuge | |
| 1 Folding I.V. stand | |
| Bed-pan | |

Staff and Transport

The members of the team proceeding to a call are made up of (1) Obstetric registrar and house-surgeon, if possible; (2) Trained sister or staff-nurse and pupil midwife; (3) Two medical students undergoing resident training in the hospital. (An obstetric registrar should be in charge of the squad, because the possession of sufficient obstetric experience is necessary in the type of case to which the unit is usually called.) If a medical practitioner has asked for the services of the squad, he is requested to remain with the patient until the unit arrives.

The team is transported by ambulance.*

The Operation of the Unit

As mentioned above, the aim of a flying squad is to treat the patient in the home (as far as possible) or to render her fit for transport to hospital.¹ This squad therefore performs two useful functions: firstly, it lessens the strain on the already overburdened hospitals and, secondly, it saves lives! The danger of transporting a severely ill and shocked patient, and the disastrous consequences, are too well known to require further elaboration.

The actual operation of the unit will now be described by giving a description of the routine for a call, followed by a review of the work of the unit in the 33 months since its inception, with some observations on the conditions treated.

Any practitioner or midwife faced with an obstetric emergency in the home or nursing home which may necessitate the attention of the squad telephones the Peninsula Maternity Hospital. The registrar and sister on duty are notified and an ambulance is called. Usually the squad is on its way within 15 minutes of the call being received.

On arrival, the registrar assesses the case and, after deciding whether it is one for complete treatment in the home or whether transport to hospital will be necessary, either dismisses the ambulance or detains it until resuscitative measures have been carried out and the patient is in a fit state to travel. If the former, the necessary treatment is carried out when the patient's condition is satisfactory, the ambulance is re-summoned for transporting the unit back to base. Before departure, the patient is handed over to the private practitioner or midwife with further suggestions and/or instructions about her after-care. If it is decided that transportation to hospital is essential, she is admitted to one of the teaching hospitals.

REPORT ON FIRST 33 MONTHS

This review of the activities of the emergency obstetric unit, which commenced operations in September 1953,

* When the unit was instituted the ambulance service was operated by the Cape Provincial Administration. It is now operated by the local authorities.

covers the 33 months ending May 1956. The total number of calls received in this period was 192, of which 174 were from doctors and midwives and 18 from the district service of the Peninsula Maternity Hospital. Most of the patients were non-Europeans. There were 6 maternal deaths amongst the patients visited.

Fig. 2 shows the number of cases treated per month since the inception of the service. There are several points of interest in this graph. It shows a steadily

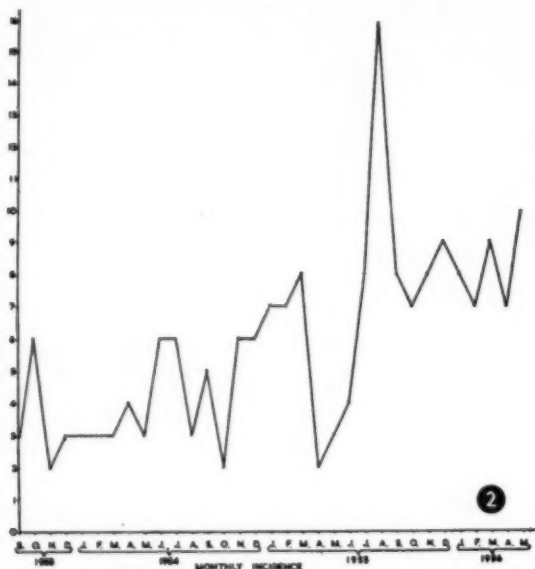


Fig. 2. Monthly incidence of calls September 1953 to May 1956.

increasing number of calls, starting with an average of 3-4 calls per month and reaching about 7 early in 1955. This was followed by a steep drop—due to newspaper publicity about the squad's being 'illegal'—the question arising because of official dissension about the role of the Provincial ambulance services in transporting the unit. At the present moment the unit is answering an average of 8 calls per month and the number is steadily rising.

The Areas Visited and Social Conditions Encountered

During the time it has been in operation the squad has visited almost every suburb and surrounding area of Cape Town. Of the 192 calls, 52 were in the area normally covered by the district service of the Peninsula Maternity Hospital (i.e. Cape Town, Woodstock, Salt River and Claremont); of these only 18 were cases under the care of the hospital, the remaining 34 being cases under the care of private practitioners, midwives, or no one at all! The next largest number of calls (28) came from Athlone, a large Coloured settlement and council housing scheme about 8 miles from the Peninsula Maternity Hospital. Windermere, a slum in the true sense of the word, accounted for 10 calls and the huge area of the Northern Suburbs (Mait-

land, Goodwood, Vasco, Parow and Bellville, with Tiervlei and Elsie's River) for 47. The Cape Flats and other outlying districts were responsible for the remainder.

The conditions under which the squad operated amongst non-Europeans varied from the most suitable to the virtually impossible, from a modern council house to the worst 'pondokkie'. In many cases, especially calls on the Cape Flats, it was necessary to carry the equipment over a mile or more of sand and bush as the ambulance could progress no further. In some cases it was necessary to transport the patient back over the same route—this time complete with intravenous drip. It is, I think, right at this point to emphasize that no patient treated by the squad ever succumbed in the ambulance or in the hospital to which she was transported.

Conditions Treated

Below is a statistical review of the activities of the squad during the 33 months under review:

POST-PARTUM HAEMORRHAGE

PPH with retained placenta (on arrival)	..	..	..	60
PPH with placenta delivered (on arrival)	..	..	..	100
PPH with retained twin	..	..	..	2
PPH, secondary	..	..	..	3
Total post-partum haemorrhage	..	..	..	165

Thus post-partum haemorrhage in one or other of its forms was responsible for 165 of the total 192 calls. In the majority of cases the squad was faced on arrival with severely shocked and ensanguinated patients requiring energetic and immediate treatment. In only a few cases (10) was no treatment necessary.

In the 100 cases in which the *third stage* was complete on arrival, treatment was general—blood transfusion, catheterization, expulsion of intra-uterine clot and the administration of intravenous ergometrine. Very few (14) of these cases were transferred to hospital and this included 2 patients suffering from traumatic post-partum haemorrhage, who could not be treated at home. The squad remained with the patient until the systolic blood-pressure was 100 mm. Hg or over and her general condition satisfactory. In 3 cases the uterus was explored in the home and retained products removed.

Of the 60 cases of post-partum haemorrhage with *placenta retained in utero*, 33 had the placenta removed manually at home and 19 were transferred to hospital for manual removal; in 6 cases the placentae were expressed and 2 patients died with the placenta *in utero* (see under heading 'maternal deaths').

The method of treatment is described below. In some cases obviously the routine differed, but the majority were dealt with as detailed:

On arrival, the patient's condition was assessed and intravenous infusion started immediately, after blood had been withdrawn for pre-transfusion tests. Intravenous ergometrine, 0.5 mg., was injected into the tubing of the drip. Blood transfusion was commenced as soon as possible. When the condition of the patient

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improved and when her systolic blood-pressure reached 80 mm. Hg, an attempt was made at expressing the placenta; if this was not successful, manual removal was carried out. The total amount of blood given obviously depended upon the patient's condition. Injections of long-acting penicillin were given as well as a sedative.

In the early months of the operation of the squad manual removal of the placenta was carried out in the patient's home, in only a few cases, the majority being transferred to hospital as soon as their condition was satisfactory. Soon, however, it became essential to do this operation in the patient's home and it was apparent that the main obstacle to this procedure was the anaesthetic. This was usually administered by the general practitioner in charge of the case, using flying-squad equipment. Great difficulty was experienced because the patient had often been encouraged (possibly correctly) to take hot drinks (tea, hot milk, etc.) by relatives and the midwife. As a result of several extremely unpleasant experiences we decided to do our manual removals using intravenous morphine, gr. $\frac{1}{4}$, previously injected slowly into the tubing of the drip. Serial readings were recorded of blood pressure and pulse rate *before, during and after* the procedure in order to assess whether excess shock was produced by this manoeuvre. The method worked very well and further investigation into it in a larger series of cases is still in progress. There were no maternal deaths in the 33 cases of manual removal done in the home and the 19 done in hospital.

The 2 cases of post-partum haemorrhage with a retained twin were both extremely shocked and ensanguinated. After resuscitation the second twin was delivered and manual removal performed. Both patients recovered.

Of the 3 cases with secondary post-partum haemorrhage, 2 needed blood transfusion. All of them were transferred to a general hospital for further treatment.

CONDITIONS OTHER THAN POST-PARTUM HAEMORRHAGE

Ante-partum haemorrhage (various causes)	..	..	14
Abortions	..	..	3
Retained placenta (no PPH)	..	..	5
Eclampsia	..	..	4
Others	..	..	1
Total	..	..	27

In all the 14 cases of ante-partum haemorrhage resuscitative measures were the only procedure carried out. The patients were then admitted to one of our maternity hospitals for further treatment. The low figure of 3 abortions is a reflection of the fact that the squad very rarely treats such cases; all these patients were transferred to a general hospital. Not one of the cases required a blood transfusion.

The 4 cases of eclampsia were all emergencies as far as our institutions were concerned; one case had been booked in a private nursing home and 3 were patients due to be confined at home. Treatment consisted of intravenous pentothal, further sedation, intravenous magnesium sulphate and dextrose 50%, followed by transfer to hospital for further treatment.

The remaining case was one of iron-deficiency anaemia, which was only diagnosed post-partum. She was given a transfusion and transferred to a general hospital.

PROCEDURES CARRIED OUT

No. of cases given blood transfusion	..	..	..	159
Pints of blood used	..	..	..	282
Expression of placenta	..	..	..	13
Manual removal of placenta—at home	..	..	..	33
After transport to hospital	..	..	..	19
Version and breech extraction	..	..	..	1
Breech extraction	..	..	..	1
Treatment for eclampsia (I.V. sedation, etc.)	..	..	..	4

MATERNAL DEATHS

A review of the activities of the squad would not be complete without an analysis of the maternal deaths, of which there were 6. Of these, 3 patients were dead when the squad arrived; the remaining 3 succumbed within 15 minutes of arrival of the squad. The details are as follows:

Case 1

A.J., Ottery, 12 September 1953. Details are scanty. The patient had a private midwife, but a live baby was born without assistance and then a post-partum haemorrhage occurred. The mother was dead when the squad arrived.

Case 2

A.F., Grassy Park, 25 March 1954. Again the details are scanty. A manual removal was carried out by the patient's private doctor and was followed by collapse. She was dead when the squad arrived.

Case 3

N.W., Athlone, 12 January 1955. This patient was delivered of twins at home, and this was followed by retained placenta. Manual removal was carried out by the private doctor. Three hours later she collapsed. The squad was called 6 hours after delivery but the patient was dead on arrival.

Case 4

J.L., Woodstock, 13 March 1955. Age 28, gravida 3, 2 previous normal deliveries. The patient was delivered normally at 2.20 p.m. (private midwife). An immediate PPH followed, with retained placenta. The squad was called at 2.40 p.m. and arrived at 2.55 p.m. On arrival the patient was cold, virtually moribund, with no recordable blood-pressure or pulse. Placenta was *in situ*. Intravenous cut-down was done and blood transfusion started, but respiration ceased at 3.5 p.m., with no further response to resuscitation.

Case 5

M.O., Duinefontein, 25 October 1955. Age 25, gravida 5, 4 previous normal deliveries. After an ante-partum haemorrhage during the evening the patient was delivered of a stillborn infant at 10 p.m. The midwife left her and returned at 11.30 p.m. to find she had had a severe PPH. The squad was called at 11.45 p.m. and the patient was seen at 12.35 a.m., when the blood pressure was 50/0 mm. Hg, and the pulse imperceptible. The placenta had been delivered spontaneously and the uterus was hard and well contracted. A cut-down was done but as blood transfusion was commenced (12.50 a.m.) the patient died.

Case 6

P.M., Goodwood, 2 January 1956. Age 24, gravida 5, 3 previous normal deliveries. With the last delivery, in September 1954, the patient had been attended by the flying squad for post-partum haemorrhage. According to the untrained midwife in attendance the baby was born at 9.30 p.m. and the mother began to bleed, with no signs of separation of the placenta. The squad was called at 9.35 p.m., and arrived at 10.30 p.m., when the patient was found to be moribund, with an acute inversion of the uterus. She succumbed within 5 minutes of the arrival of the squad, before positive action could be undertaken.

Comment: Three of these deaths could obviously not have been avoided by the personnel of the flying squad and it is extremely doubtful whether anything could have been done for the remaining 3. It is significant that 2 of the deaths followed manual removal without pre- or post-operative resuscitation, whereas in the 52 cases where shock and haemorrhage were treated before manual removal there were no deaths. Case 6 was obviously a woman who should never have been confined at home (many of the cases treated by the unit fell within this category). Cases 4 and 5 were gravida 3 and 4 respectively with previous normal obstetric histories who, if they had been booked at an institution, would have been delivered in their homes by the district maternity service, yet one died within 40 minutes of delivery and the other (who had been unable to obtain a booking in a hospital earlier in her pregnancy) could not be admitted as an emergency when she had an ante-partum haemorrhage, as there was no bed available, even as an emergency. Particularly as she was delivered by a midwife who left her to attend another confinement, her death must be attributed to the inadequate maternity services at present existing in the Peninsula.

CONCLUSION

It seems certain that the flying squad has justified its existence. The idea behind the service could be applied

with advantage to almost every other branch of medicine. The advantages of emergency treatment on the spot before transport to hospital are multiple and one wonders how many lives would be saved if it were universally carried out.

SUMMARY

1. An account is given of the inception, organization and operation of the Cape Town Obstetric Flying Squad.
2. A statistical review of the activities of the unit is given and methods of treatment discussed.
3. A survey is made of the maternal deaths occurring on the service.

Thanks are due to the University of Cape Town Students' Hospital Rag Fund for its generous donation which enabled costly equipment to be purchased, to the nursing staff of the Peninsula Maternity Hospital for their competent aid in these extreme emergencies, to the ambulance services for their cooperation and help, and to the resident medical students for always lending a keen helping hand.

I am also indebted to the Superintendent of the Peninsula Maternity Hospital for permission to publish this review and to Prof. James T. Louw for his constant help and encouragement.

REFERENCE

1. Stabler, F. (1947): B.M.J., 2, 878.

REPORT ON DYSENTERY OUTBREAK CAUSED BY INFECTED MILK

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Union Health Department, Johannesburg

On 20 and 21 September 1955 over 90 cases of suspected food-poisoning, including 4 deaths, were reported in a South African town. Food poisoning is not notifiable, and it is possible that an even larger number of persons were affected.

The first cases arose in a non-European crèche-nursery school in the location, where 64 children between the ages of 3 and 8 years, out of a total of 125, and 9 adults of the staff, became ill from 10 p.m. onwards on the night of Monday 20 September. Thus the outbreak assumed an explosive form, as is frequent with such infections.¹ Later enquiry revealed that a number of European residents, one European adult from a neighbouring village, and a European child from further afield, were also affected. Both the latter cases were found to have visited the town on the Monday.

Throughout, the clinical case-histories were uniform in character, varying only in degree in their symptomatology. Common features were pyrexia, nausea, vomiting, headache, abdominal cramps, tenesmus and diarrhoea, accompanied in some cases by a mucopurulent bloody discharge from the rectum. In the more severe cases shock became marked, culminating in the deaths of 3 non-European children and one European child.

Investigation showed that various foods had been consumed by the nursery-school group and other affected groups. Korf, Tabach and Beard,² in a co-ordinated investigation of suspected food-poisoning, demonstrated a statistical epidemiological procedure for determining offending foods in an outbreak in the absence of facilities for bacteriological analysis. This method presupposes a reliable history and the consumption of a number of different foods. By judicious elimination of foods eaten by sufferers and non-sufferers and emphasis on the group who had consumed the largest quantity of one single suspected food, the pointer is given to the most likely source of infection. This principle, which is usually adopted in any outbreak, was in fact applied here, with the added facility that laboratory diagnosis was also available.

The result of the investigation showed sour milk to be the common food-factor in all the cases. This sour milk was produced in a milk-depot in the town. The children at the crèche had received their usual quota of the sour milk on the Monday and this was consumed at 2.30 p.m. that day. The first symptoms were noticed some 7 hours later. By midday on the Tuesday, the sale of sour milk from the milk depot in question had been suspended, but not before that day's supply, too, had been sold over the counter to

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the general public. The European owner-manager himself developed symptoms of food poisoning about 6 hours after consuming some of the Tuesday's supply, whilst a European child 7 or 8 years old, who died in a distant town, was shown to have only drunk sour milk from Tuesday's supply.

It was evident that the sour milk was the cause of the outbreak, and it remained to establish the source of the contamination. Clearly the fresh milk from the depot could not be implicated, because 20 gallons had been supplied to the hospital and the high school, where no cases had occurred. As only the sour milk sold on Monday and Tuesday, i.e. that prepared on the Sunday and Monday, were under suspicion, it was important to establish the condition of production on those days by comparison with that formerly existing. Interrogation revealed that sour milk was normally prepared in the depot in the following manner:

From the fresh milk obtained either daily or on alternate days from a near-by farm, 18 gallons are skimmed, the rest being sold as fresh milk immediately on arrival. A sterilized 'culture' of *B. cremoris*, supplied by a recognized distributor, is now added in small quantities into 3 separate bottles each containing half a pint of skimmed milk, and these mixtures are then maintained at 50°F. One bottle of this 'starter medium' is then added to 9 gallons of skimmed milk, which is normally first boiled in the back yard of the milk-depot over an open fire for an hour in a sterilized can and allowed to cool to 90°F. After the addition of the starter the mixture is immediately boiled on an open fire in the back yard and left to cool for a variable period, usually between 20 and 24 hours. This mixture, now known as sour milk, is decanted into bottles and sealed for sale to the public. The boiling and cooling processes are normally supervised by the European manager himself assisted by one non-European employee, who shall be named X. On the Sunday in question, at the production of the first batch of sour milk X was apparently in sole charge, and he states that to facilitate the cooling of the milk and starter after boiling, he removed the lids from the containers and left the contents exposed to the air until it was cool. Evidence could not be obtained as to who was responsible for the boiling of the milk before the addition of the starter, though the impression gained was that the European had supervised this part of the process the previous day. Nor could reliable evidence be obtained as to who carried out the above procedures on the Monday.

The investigation revealed that the inside of the depot was reasonably clean. Some 12 to 15 feet from the cooling site, however, there stood an ungauged unprotected pail-privy and, adjoining the yard of the depot and divided from it by only a wire-netting, a fowl-run. Mice droppings revealed the presence of mice in the depot itself.

Pathological Investigations

Specimens of the following were submitted for repeated investigation:

- (a) All food eaten at the crèche on the Monday.
- (b) Gastric contents of one of the deceased children.

(c) Fresh milk used in the preparation of sour milk.

(d) The 'culture' used to inoculate the milk.

(e) Sour milk from both Monday's and Tuesday's supplies.

(f) Stools, urines and rectal swabs from all employees at the milk depot.

(g) Blood for agglutination tests.

(h) Mice and fowl droppings.

Findings. No abnormal bacteriological or chemical findings were revealed in respect of (a), (c), (d), (g) and (h); but the gastric contents of the deceased child, the stools of 6 non-European employees (including X), and the sour milk yielded a growth of *Shigella Newcastle*, which morphologically and toxicologically is classified in the dysentery group.

Previous outbreaks of food poisoning are reported to have occurred as the result of infection with the organism, and milk and its products appear to be suitable media for its growth. As is common in food poisoning caused by similar organisms, the severity of an outbreak varies proportionately with the amount of organisms ingested and the virulence of the bacterium at the time of ingestion. Symptomless carriers are said to be common, but their existence usually remains unknown until a sporadic outbreak of food poisoning or dysentery draws attention to their presence.

In 1949 Warner³ submitted a simplified bacteriological classification of food poisonings and excluded from the definition infections by *Shigella* organisms and *Salmonella typhi* and *paratyphi*. Christie⁵ states that the dysentery organisms can survive on dry linen, taps, door-handles, crockery, and lavatory plugs. Where washing facilities are poor, and the staff ignorant, illiterate or badly informed, all the conditions exist for the spread of an infection.

It has been stated that so easily can the *S. Newcastle* be conveyed from carriers to others in close contact that the unveiling of a single carrier has frequently been associated with the presence of the bacillus in the workers closely associated with that employee. As is shown in this report, this was in fact the case here.

Discussion

It is clear that the vehicle in this outbreak was the sour milk prepared on Sunday and Monday, 19 and 20 September, respectively. Contamination most likely occurred during the cooling process while the contents of the cans were left uncovered. It cannot be incontrovertibly asserted that X was the only and original vector, in view of the presence of 5 other carriers discovered working in the depot. This latter group, however, only handled the milk after it had been bottled and was ready for delivery; nor did the virulence and agglutination tests subsequently done assist in specifically incriminating X, for the results were inconclusive. The fact that is indisputable is that X alone handled the sour milk before it was bottled, while the others did not. The possibility of contamination arising from flies infected from the faeces in the open pail-privy could also not be discounted, as it could not be definitely ascertained that flies were not present at the suspected time of contamination.

Course and Control of Outbreak

The epidemic ceased spontaneously on the cessation of supply of sour milk. The Native X was removed to other suitable employment. The hygiene of the depot was improved and offending factors removed. In view of the grave risk that the remaining Native employees might also infect the supply, and the long period that must elapse before these men could be rendered bacteriologically negative, it was decided to find other employment for them also. In an outbreak of Sonne dysentery occurring in the Papworth Settlement, England, positive food-handlers were not allowed to return to work until 6 consecutive negatives had been obtained.⁴

Sensitivity tests were undertaken to ascertain the antibiotic most likely to effect a rapid and possibly permanent cure. These revealed that the organism was sensitive to both Terramycin and Chloromycetin. Instructions were issued to treat all the employees affected by the organism. Unfortunately they 'disappeared', but it is known that they are not employed in food establishments in the town.

REFLECTIONS ON THE ART OF GENERAL PRACTICE*

A. G. BLYTH, M.B., CH.B. (CAPE TOWN)

President, South-Eastern Division of the Cape Western Branch of the Medical Association of South Africa

I have chosen to reflect on the art of general practice for the reason that I have always been more interested in the personal, the human, or what might be called the philosophical, aspect of the physician's work rather than in the coldly scientific aspect. As a small boy I conceived a great admiration and regard for our family doctor. I still remember the atmosphere of calm, trust and reassurance that came with his entry into our home and have little doubt that this factor greatly influenced my early decision to follow the calling of general practice.



Dr. A. G. Blyth

A fundamental law of life is variability, and nowhere is this fact more apparent than in the infinite diversity and variety of human types, not only in their physical make-up but in what concerns us most intimately—their varied and often unpredictable reaction to disease. For this reason, and the fact that probabilities and not certainties must ever be our guide, one feels that the practice of medicine can never be a pure science but will truly remain, as it was in the beginning, an Art.

Art may most simply be defined as self-expression in any

* Valedictory Presidential Address delivered at a meeting of the South-Eastern Branch, held at Mossel Bay, C.P., on 11 August 1956.

SUMMARY

1. An epidemic of *Bacillus* Newcastle dysentery is described, affecting over 90 persons and resulting in 4 deaths.

2. *Shigella* Newcastle was identified in the suspected carriers, in the sour milk conveying the infection, and in the gastric contents of a deceased child.

3. Views are expressed as to the exact manner in which the infection was conveyed from handler to food substance.

I have to express my thanks to the Secretary for Health for granting permission to publish.

REFERENCES

1. Christie, A. B. (1955): Practitioner, 174, 672.
2. Korf, M., Tabach, H. and Beard, M. D. (1952): Publ. Hlth. Rep. (Wash.), 67, 909.
3. Warner, E. C. (1955): Practitioner, 174, 652.
4. Committee, Papworth Village Settlement (1953): Monthly Bull. Minist. Hlth. (Lond.), 12, 229.
5. Christie, A. B., *loc. cit.*,¹ p. 673.

shape or form. When a physician achieves his highest aim, he has expressed himself by contributing to the welfare and happiness of his fellow man. Though his art has been creation in an intangible form, he has—to quote Lao Tung, the old Chinese master-painter—'made himself the equal of the gods, for he has touched the hem of Eternity'. To attain this aim he must, just like the painter, sculptor or composer, give much of himself or he is sure to fail.

HISTORICAL

The ancient practitioners knew little of the science of medicine, yet it must be assumed that many of their patients believed in them. How else could neolithic man have been allowed to trephine skulls with his crude flint knife? Ancient medical practice was a mixture of magic, demonology and placation of the various deities. It is curious how many of the superstitious beliefs of those days have persisted to the present day, and not only amongst the patients of the witch-doctor. How difficult we still find it to convince some of our patients that radium is better treatment than the magical cancer plaster.

Medicine and religion were intimately related from the earliest times, and for centuries the so-called priest-physicians flourished. Through their temples of healing passed a wealth of clinical material. Whether they were mere charlatans or inspired faith-healers, the fact remains that miraculous cures were attributed to them and some of them were even deified.

It was left to the Greeks with their sane intellect to sort things out. They established their first medical schools at Cnidos and Cos, in which magic and superstition were ruthlessly discarded. They based their medicine on a science of accurate and detailed observation. Unfortunately, they developed a fault we have seen repeated in modern medicine—a scientific outlook so much cherished that the patient as a living entity became a secondary consideration. Yet from the school of Cos arose Hippocrates, the Father of medicine, whose high ideals have been respected by the profession for over 2,000 years. The precepts of his famous oath are as much a guide to medical practice to-day as they were in ancient times.

Only during recent centuries did the art of medical practice escape from the void of the dark ages which succeeded the classical

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period. The Hippocratic art of observation and faithful recording was revived. Many were the classic descriptions of diseases. It is noteworthy that, during this era, the great ones to whom we owe so much of our present-day knowledge of medicine were usually general practitioners. With no aid but that of their trained senses they observed—and wrote their masterpieces. If their conclusions were sometimes faulty, who can blame them? In their pioneering efforts at new treatments they often rose to heights of heroism. Perhaps only today, when we hesitate to advise on polio injections, can we appreciate the courage of Jenner in vaccinating his own son.

Probably the greatest doctor of our time was a general practitioner or, as he preferred to be called, a 'family doctor'—Sir James Mackenzie, the founder of modern cardiology, but above all the finest example to all who would practise medicine. It was said of him that merely by feeling a patient's pulse he could make an uncanny estimate of the prognosis. This was no supernatural gift but the result of many years of patient observation, training of the senses and faithful recording. He was, perhaps, the supreme example in our time of a man learning from his own experience and love of humanity, and becoming an authority as a direct result. Today, with all the mechanical aids at our disposal, we are far too apt to forget that nothing in our art can take the place of the trained and unaided senses.

THE ETHICS OF GENERAL PRACTICE

In considering the art of general practice, it becomes apparent that the daily life of the family doctor is really made up of a multiplicity of arts. We shall be able to touch on only a few of them. He actually—in the better sense—has to live by his wits. As far as is humanly possible he influences issues of life and death. In the country particularly, he has at times to carry, alone, the responsibility of those frightening and terrible emergencies, during which, in spite of the fear and uncertainty in his heart, he must sustain, not only the patient, but the panic-stricken household. This, the art of calmness in crisis, may arise from qualities of character and wisdom in the doctor but I believe that it is not attained without an abiding faith and trust in God, and that sooner or later each one of us must learn the power and comfort of prayer.

It was said by Chainpneys, 'A patient is a person who needs a doctor; a doctor is not in the same sense a person who needs patients. A patient is not primarily an organism for extracting so many guineas per annum as a cow secretes milk under the blandishments of the dairymaid'. This raises the whole vexed question of the financial aspect of medical practice. I would say here for the benefit of my younger colleagues that anyone who enters general practice with the idea of making a fortune is doomed to unhappiness. The worship of Mammon is an insidious disease with great destructive potential. Before long it will inevitably cloud the judgment and attack the moral fibre of the worshipper. Too late comes the realization that it profits a man little to gain the world if he should lose his soul. Unfortunately medical practice is wide open to abuses by the unscrupulous. To mention a few instances: Overvisiting—disguised under the cloak of solicitous concern; the suggesting of expensive lines of treatment when simpler will suffice; and—most inexcusable of all—the perpetration of unnecessary or not wholly necessary operations. We all know the female patient who flits from colleague to colleague with a pelvic fixation. In the fullness of our wisdom we make a negative gynaecological diagnosis. When next we hear of the lady she has had a curettage, a ventral suspension and/or an ovariectomy. Her sense of the dramatic has been temporarily satisfied. Somewhat later she is not so pleased with herself when there is a return of pelvic symptoms which, in the absence of a long-since-removed appendix, strongly suggest the advent of adhesions.

Medicine should teach us that all life is sacred. When a doctor decides to operate he must do so with a crystal-clear conscience and the firm belief that he is doing the right thing. It is essential for the general practitioner to know and realize his own limitations. If he attempts things beyond his skill he harms not only his patient but the professional standing of his colleagues. Many of us feel that Caesarean section is done far too readily these days. Would this be the case if we viewed this operation for what it really is—an expression of failure of the obstetric art?

In spite of what I have said, it is necessary for the doctor-patient relationship that there should be fees. Not only must

the doctor make his living, but the surest way of building up hidden resentments is to have people indebted to him. The average patient likes to pay his doctor, provided he feels he is being fairly and honestly treated. Possibly the art of happy relationship lies in making him realize that he has had the best one can give him without having his resources strained to the point of hardship.

I am reminded of a patient on whom I did the first operation of its kind in Ladismith. A large tumour was removed and duly admired by friends and relations. When a year later my bill was presented, I received a remarkable letter in reply. The dear lady was amazed at my effrontery. Had she not shown her trust and faith in allowing me to operate on her? Had my reputation not greatly increased as a result? Had she not done her part in surviving? On reflection I realized that she was perfectly right. I could not explain to her that my anxiety over a possibly damaged ureter had in itself earned the fee, but nevertheless it brought home to me how much in fact we doctors do owe our patients when they get well and how lucky we are in often being paid twice over.

In my experience patients will forgive practically anything except casual treatment. If we remember that it is a privilege to have patients at all, that more mistakes are made by not looking than by not knowing, that we must at least start off by believing what the patient tells us about himself—'it was frae monie a blunder free us'. It is no good saying, particularly when calls come at inconvenient times, that a doctor is not a slave. He is a slave, if not to his patients then to his art. Remembering this might avoid some of the unkind things said about doctors these days.

Here I would like to quote Dr. Smellie, writing of the 'Requisite Qualifications of Accoucheurs'. 'Over and above the advantages of education he ought to be endowed with natural sagacity, resolution and prudence, together with the humanity which adorns the owner and never fails of being agreeable to the distressed patient; in consequence of this virtue he will assist the poor as well as the rich, behaving always with charity and compassion'.

And now—what can be the most priceless gift of all—the art of living in harmony with our fellow beings. What we poor mortals seek and desire perhaps more than anything in life is happiness. One has but to observe the many and varied methods adopted in its search. How can any doctor, no matter whether he lives in the finest house, drives the most expensive motor car, or dresses his wife in the most luxurious furs, be truly happy if he lives in enmity and discord with his colleagues? Not that I presume to judge the man who needs display of material success to bolster his feeling of well-being. My point is, simply, that little in life can be more important to us than the esteem of our peers who, after all, are best fitted to judge our worth.

AMITY BETWEEN DOCTORS

The distasteful subject of the supposed declining status of the G.P. has been discussed *ad nauseam* during recent years. Nothing more surely contributes to such decline than an awareness by the public of bickering and discord in our ranks. Only last week a friend, discussing his home town, said to me that it was awful to live in a place where the doctors could not work together. At the risk of being accused of repeating time-worn platitudes, let me appeal not only to the younger generation, who must be entrusted with the task of restoring the G.P. to the high plane he once occupied, but also to the older generation, whose duty it must be to assist the young men in that task—not by regarding them as a competitive threat to security but as the heirs and logical successors to the practice of our great art. Let us respect our colleague as we would have him respect us, and never try to score by 'pulling a fast one' over him. To our patients in particular—*nil nisi bonum* concerning him. By learning the art of reticence in all that is said to patients—how they love carrying embroidered versions of our statements back to our colleague—a most certain cause of enmity is avoided.

Obeying the old rules of etiquette merely means that we are doing as we would be done by. We generally treat our specialist friends with great courtesy. Cannot we show the same degree to our fellow G.P.s? Let us regard professional jealousy as any other type of jealousy—an emanation from an immature mind. Will this not enable us to settle our differences calmly and dispassionately, not as barbarians but as men of wisdom, education

and culture? Let us never hesitate to learn from one another. The older practitioner has much to give from the fruit of his rich experience; the younger with his fresh outlook and untarnished idealism can be a tremendous stimulus to the man who would escape from the dreadful rut in which we, all too often, find ourselves. It is no longer possible, as it was for Conan Doyle's dear old Dr. Winter, to practise medicine for so many years that one finds oneself, not only up to date, but leading the profession.

We may be mindful of what Paracelsus said during the Middle Ages: 'I went in search of my Art often in danger of my life.

I have not been ashamed to learn those things which have seemed to me useful, even from vagabonds, barbers and executioners. For we know how a lover will go a long way to meet the woman he loves. How much the more will the lover of wisdom be tempted to go in search of his divine mistress'.

If we are able to live up to Abraham Lincoln's dictum that there is no limit to what a man can achieve in life, provided he cares not who gets the credit, we shall in true humility, realize and remember that our art is infinitely greater than ourselves and that, unlike us, it is imperishable.

SUID-AFRIKAANSE MEDIESE KONGRES, DURBAN, 1957

WETENSKAPLIKE UITSTALLING

'n Wetenskaplike Uitstalling sal een van die hoofnommers van die 1957-Kongres te Durban wees, en sal 'n unieke geleentheid aanbied vir die demonstrasie van wetenskaplike werk wat in die Unie gedoen word, nie alleen deur amptelik beskermd navorsings-eenhede nie, maar ook deur individuele dokters wat, so word dit gehoop, 'n groot aandeel aan die Uitstalling sal hê.

Behalwe suiwer mediese navorsing, kan die bestek van die Uitstalling ook die volgende insluit: Antropologie en genetika, sielkunde en die toets vir industriële aanleg, publieke gesondheid en sanitasie, mediese aspekte van atoom-energie, voedingsleer, voedseltechnologie en kwaliteitsbeheer, die produksie en beheer van terapeutiese stowwe, veeartsenykunde en die soönoses hospitaalbeplanning en die organisasie van mediese dienste, bloed-oortapping, die geskiedenis van medisyne en sy instrumente, en stam-medisyne en gewoontes.

Die Wetenskaplike Uitstalling sal heeltemal apart wees van die Handelsuitstalling en die Uitstalling van Dokters se Stokperdjies.

Die Uitstalling sal 'n kineematografiese teater insluit waar 'n daaglikse program van mediese en wetenskaplike films en filmstroke of deursigtige plate vertoon sal word.

Sal alle lede van die Vereniging wat graag aan hierdie Uitstalling wil deelneem, asseblief die Wetenskaplike Uitstillings-komitee (Voorsitter dr. J. C. Thomas, Sekretaris, Mnr. G. Stafford en dr. E. E. Rosenberg), Mediese Sentrum 112, Fieldstraat, Durban, so gou moontlik daarvan verwittig en die aard van hulle uitstalling aandui, asook die lengte- of vierkantvoet-spasie wat hulle uitstalling by benadering sal opneem, of krag, water, dreinerings of gas benodig sal wees, en watter tyd films en plaatjies ongeveer vertoon moet word?

SELECT LIST OF RECENT ACCESSIONS TO THE MEDICAL LIBRARY, UNIVERSITY OF CAPE TOWN

- Bergman, S. *In vitro* studies on antimycotics. Lund, Hakan Ohlssons boktryckeri, 1955.
- Bernheim, B. M. *The story of the Johns Hopkins*. Kingswood, World's Work, 1949.
- Ciba foundation. *Colloquia on endocrinology*, v. 9: Internal secretions of the pancreas. London, Churchill, 1956.
- Downes, H. R. *The chemistry of living cells*. London, Longmans Green, 1955.
- Dundee, J. W. *Thiopentone and other thiobarbiturates*. Edinburgh, Livingstone, 1956.
- Feinberg, S. M. and others. *Allergy in practice*. Chicago, Year-book publishers, 1946.
- Fishbein, M. editor. *Medical progress 1955*. New York, McGraw-Hill, 1955.
- Gaebler, O. H. editor. *Enzymes*. New York, Academic press, 1956.
- Henshaw, P. S. *Adaptive human fertility*. New York, McGraw-Hill, 1955.
- Hinshaw, H. C. and L. H. Garland. *Diseases of the chest*. Philadelphia, Saunders, 1956.
- Kahn, E. A. and others. *Correlative neurosurgery*. Springfield, Thomas, 1955.
- Katz, L. N. and J. Stamler. *Experimental atherosclerosis*. Springfield, Thomas, 1953.

- Leavell, H. R. and E. G. Clark editors. *Textbook of preventive medicine*. New York, McGraw-Hill, 1953.
- Lewis, B. *The plasma corticosteroids*. Typescript, 1956 (Thesis Ph.D., University of Cape Town.)
- Lewison, E. F. *Breast cancer and its diagnosis and treatment*. Baltimore, Williams & Wilkins, 1955.
- Miller, S. E. editor. *A textbook of clinical pathology*. London, Baillière, Tindall & Cox, 1955.
- Montagna, W. *The structure and function of skin*. New York, Academic press, 1956.
- Pearce, E. C. *Anatomy and physiology for nurses*. London, Faber, 1943.
- Pickering, G. W. *High blood pressure*. London, Churchill, 1955.
- Tocantins, L. M. editor. *Progress in hematology*, v. 1. New York, Grune & Stratton, 1956.
- Pryor, W. J. *A manual of anaesthetic techniques*. Bristol, Wright, 1956.
- Shelley, W. B. and J. T. Crissey. *Classics in clinical dermatology*. Springfield, Thomas, 1953.
- Sterling, J. A. *The biliary tract, with special reference to the common bile duct*. Baltimore, Williams & Wilkins, 1955.
- Talbott, J. H. and R. M. Ferrandis. *Collagen diseases*. New York, Grune & Stratton, 1956.

PASSING EVENTS : IN DIE VERBYGAAN

The William Gibson Research Scholarship for Medical Women. Applications are invited for this scholarship from women who are British subjects and who hold a registrable medical qualification. The scholarship, which is normally awarded for two years but which may be extended for a third year, is for £200 per annum. In choosing the scholar, the Council of the Society will be guided by the research work already done or contemplated by candidates. It is expected that a candidate will hold a recognized appointment

and that the scholarship will be a useful aid to research either in the United Kingdom or abroad. There is no examination, nor need a thesis be prepared for publication; but the Council expects to receive an annual report from the Scholar on work made possible by the award and that due recognition of the award will be given in any papers subsequently published.

The next award will date from 1 October 1957, and applications must be received by the Society by 31 May 1957. They should

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give details of professional training received, appointments held, and research work undertaken or contemplated. The names of two referees should be given. Applications should be addressed to the Secretary, Royal Society of Medicine, 1 Wimpole Street, London, W. 1.

The East Rand Branch of the Medical Association of South Africa is holding a cocktail party and dance at the Springs Country Club on Wednesday, 5 December 1956 at 6.30 p.m., the proceeds of which are to be donated to the Benevolent Fund. The price of a double ticket is £2 10s., and tickets are obtainable at the office of the East Rand Branch, Cranbourne House, 35 Cranbourne Avenue, Benoni. The officials of the Springs Country Club have extended the courtesy of the club to all members of the Eastern Province Branch during the afternoon.

Dr. I. N. Marks, B.Sc., M.B., Ch.B., M.R.C.P.E., who is working at present at Temple University Hospital, Philadelphia, on a research grant in gastro-enterology, was recently awarded second prize in a world-wide competition for a paper on some aspects

of original gastro-enterology research. This competition was organized by the American Gastro-enterological Society, and Dr. Marks received his prize at a ceremony in New York a few weeks ago. Dr. Marks went to the United States in August of this year, after spending 4 years at the Western General Hospital, Edinburgh, where the work on which his prize-winning paper was based and carried out.

Malaria Notifiable throughout the Union: In Government Notice No. 2081 of 9 November 1956, the Minister of Health has declared malaria to be a notifiable disease throughout the Union of South Africa in terms of section 18 of the Public Health Act No. 36 of 1919, as amended.

The next meeting of the Research Forum, University of Cape Town, will be held at 12 noon on Tuesday, 4 December 1956 (not 6 December as previously stated), in the A-Floor Lecture Theatre, Groote Schuur Hospital, Cape Town. Speaker: Dr. C. Merskey (in collaboration with Professor N. Sapeika, Dr. C. J. Uys and Dr. B. Brontes-Stewart). Subject: Experimental atheroma and blood coagulation.

REVIEWS OF BOOKS : BOEKRESENSIES

HISTOPATHOLOGY OF THE SKIN

Histopathology of the Skin. Second Edition. By Walter F. Lever, M.D. (Pp. 518 + xviii, with 281 illustrations. 96s.) London, Philadelphia, Montreal: J. B. Lippincott Company. 1954.

Contents: 1. Introduction. 2. Embryology of the Skin. 3. Histology of the Skin. 4. Laboratory Methods. 5. Morphology of Mesodermal Cells. 6. Congenital Diseases (Genodermatoses). 7. Noninfectious Vesicular and Bullous Diseases. 8. Noninfectious Inflammatory Diseases. 9. Eruptions Due to Drugs. 10. Degenerative Diseases. 11. Bacterial Diseases. 12. Spirochetal Diseases. 13. Fungal Diseases. 14. Diseases Caused by Protozoa. 15. Diseases caused by Viruses. 16. Metabolic Diseases. 17. Systemic Diseases of Unknown Cause. 18. Epidermal Tumors. 19. Mesodermal Tumors. 20. Pigmented Nevi and Malignant Melanoma. 21. Lymphoma and Myelosis. Glossary. Index.

In the last decade or so a small number of workers in a few countries have done a great deal to raise dermatology from the status of a terminological mystery to a science. One of these men is W. F. Lever, and the first edition of his book was a praiseworthy contribution to the new scientific dermatology.

The second edition of Lever's book is still of handy size (6½ inches + 9½ inches + 1½ inches) and, thanks to good planning, is very easy and pleasing to use. The systematically grouped diseases appear in conveniently large print on glossy paper and each begins with a few lines on the clinical aspects, for the benefit of pathologists. A description of the histopathology follows and this is neither too long nor too short. Where applicable there is a statement of the differing views on the aetiology, usually with the author's opinion as well. Finally there is a paragraph on the differential diagnosis, with cross-references to other parts of the book. The diseases in a chapter are clearly separated from each other and the sub-headings are in a bold type that stands out well. Selected references are placed at the end of each chapter and are grouped according to the diseases to which they refer. There is a useful glossary of histopathological terms at the back of the book. In the index, numerals in bold-face type indicate the main reference to the subject.

Additions to the diseases discussed in the first edition are: beryllium granuloma, papular myxoedema, porphyria, ochronosis, hibernoma, and haemangiopericytoma. The descriptions of the vesicular and bullous diseases and the chapter on naevi and melanomata have been rewritten, and there are improvements in the description of the atrophic lesions of the vulva. There have been additions to and improvements in the photomicrographs that closely follow the text.

The quality of the subject matter in this book is of the highest order. The text is concise, accurate, sound and scientific throughout. The only fault that the reviewer found which is worth mentioning is the omission of the subject of kerato-acanthoma or molluscum sebaceum, which was discussed in several papers that were published before 1954.

There are bigger, costlier, more encyclopaedic and heavier

books (one weighs 9 lb.) on the histopathology of the skin available today, but none of them will be as generally useful as Lever. This book can be wholeheartedly recommended to all those who study or practise dermatology or pathology.

J.C.E.K.

THE BODY FLUIDS

The Body Fluids. By J. Russell Elkington, M.D. and T. S. Danowski, M.D. Pp. xxii + 626, with 175 illustrations. 80s. Baillière, Tindall and Cox Ltd. 1955.

Contents: Part I. Basic Physiology. 1. Body Fluid Dynamics. 2. Paleochemistry Evolution, and Comparative Physiology of the Body Fluids. 3. Methods of Studying Body Fluid Distribution. Part II. Basic Principles as Common Denominators in Clinical Situations. 4. The Water and the Electrolytes of the Body in Health. 5. Mechanisms which Guard the Volume and Composition of the Body Fluids in Health. 6. Common Denominators in Disease States Leading to Deficits of Body Constituents. 7. The Physiologic Effects of Water and Electrolyte Deficits and Their Treatment. 8. Common Denominators in Disease States Resulting in an Excess of Water or Electrolytes and Their Physiologic Significance. 9. Therapy of Excess of Water or the Chief Electrolytes. 10. Anion-Cation Balance and pH: Physicochemical and Physiological Mechanisms. 11. Anion-Cation Balance and pH: Clinical Disturbances and Their Treatment. Part III. Disease Entities. 12. Renal Failure. 13. Congestive Heart Failure: A New Steady State. 14. Cirrhosis and Ascites. 15. Diabetic Ketosis and Coma. 16. Familial Periodic Paralysis. 17. Water and Electrolyte Changes in Relation to the Anterior Pituitary, Thyroid, Gonads, and the Pancreatic Islets. 18. Hypo- and Hyperfunction of the Adrenal Cortex. 19. Diabetes Insipidus and Other Disorders of the Antidiuretic System. 20. Pediatric Fluid Disorders and Their Therapy. 21. Body Fluid Problems in Surgical Patients. Part IV. Clinical Data and Practical Therapeutics. 22. Clinical and Laboratory Assessment of Body Fluid Disturbances. 23. Range of Requirement of Individual Fluid Constituents and Their Homeostatic Limitations. 24. Techniques and Solutions in Replacement Therapy. 25. Vividialysis in the Therapy of Excesses or Deficits. Appendix. The Balance Technic.

There has been much advance in recent years in our knowledge of the physiology and biochemistry of the body fluids and the disturbances that take place in diseased states. Much has been achieved in a relatively short time and the great advance in this knowledge will be further increased with benefit in its application to sick people.

The authors of this profusely illustrated and well documented volume give a full account of the basic physiology and practical therapeutics of this subject. They present a unified concept of the dynamic interactions of the body fluids which can be used by the physician as a background for the analysis of disturbances of the body fluids observed in his patients. The principal divisions of the body fluids are described, with illustrations of the types of chemical and physical forces in fluid systems. An outline is given of the various constituents of the body fluids related to the total water-content of the various fluid-phases and to one another. The problems that arise in clinical practice regarding replacement therapy are discussed. The limitations and usefulness of laboratory analyses and the clinical assessment of the patient are emphasized. Deficits in calcium, magnesium, protein and other

electrolytes are discussed in relation to particular disease-entities. The controversy that exists concerning the effects of posterior pituitary and adrenal cortex hormones upon electrolyte and water excretion is considered. Two chapters are devoted to the role of the hydrogen ion concentration in the body fluids and its physico-chemical regulation by buffer systems and the regulation and readjustment of the latter systems by the lungs and kidneys. The methods by which the composition of body fluids are estimated are described: direct analyses of tissues or entire carcasses, *in vitro* studies, the use of radio-active substances, and metabolic balance techniques. Reference is made to the defects of many test-substances used to determine the volume of the extracellular fluid (plasma and interstitial space). The availability of radio-active isotopes for use as tracer constituents in the body fluids, the development of the flame photometer for the rapid estimation of sodium and potassium, and the tremendous expansion of research in recent years have begun a new era in the study of water and electrolytes. This book gives a good insight into all aspects of the subject.

N.S.

TOXICOLOGY

Handbook of Poisons. By Robert H. Dreisbach, M.D., Ph.D. Pp. 426. Illustrated. \$3.00. Los Altos: Lange Medical Publications. 1955.

Contents: Section I. General Consideration of Poisons and Poisoning. 1. Emergency Management of Poisoning. 2. General Principles in the Treatment of Acute Poisoning. 3. Prevention of Poisoning. 4. The Physician's Legal and Medical Responsibility in Poisoning. Section II. Pesticides and Other Agricultural poisons. 5. Chlorinated Insecticides. 6. Phosphate Ester Insecticides. 7. Miscellaneous Pesticides. 8. Rodenticides. Section III. Industrial Hazards. 9. Nitrogen Compounds. 10. Halogenated Hydrocarbons. 11. Alcohols and Glycols. 12. Esters, Aldehydes, Ketones, and Ethers. 13. Hydrocarbons. 14. Corrosives. 15. Metallic Poisons. 16. Cyanides, Sulfides, and Carbon Monoxide. 17. Pneumoconioses. Section IV. Household Chemicals. 18. Cosmetics. 19. Food Poisoning. 20. Miscellaneous Household Chemicals. Section V. Medicinal Poisons. 21. Analgesics and Antipyretics. 22. Anesthetics. 23. Depressants. 24. Drugs Affecting the Autonomic Nervous System. 25. Antiseptics. 25. Cardiac Drugs. 27. Chemotherapeutic Drugs. 28. Stimulants. 29. Irritants and Rubefacients. 30. Cathartics. 31. Endocrine Drugs. 32. Miscellaneous Therapeutic and Diagnostic Agents. Section VI. Plant and Animal Hazards. 33. Reptiles. 34. Arachnids and Insects. 35. Fish. 36. Plants. Appendix: Mechanical Resuscitation Equipment. Supplementary Oxygen Equipment. Index.

This volume of handy size for the pocket or the bag is one of a series of publications a few of which are already well known in this country. In this particular book there is concise presentation of facts relating to symptoms, diagnosis and treatment of poisoning by a large number and variety of toxic agents. Consideration is given not only to poisonous substances used medicinally but also to those encountered in industry, agriculture, in the home, and in nature. Some idea of the numerous classes of compounds dealt with is given by the list of contents at the head of this review. There are numerous tables, formulae, classifications, and some illustrations, e.g. methods of artificial respiration, resuscitating equipment, and poisonous fish. The newer antidotes used in metallic intoxication, viz. dimercaprol and sodium-calcium-edetate (edathamil calcium disodium), and the use of nalorphine are mentioned in the appropriate places. In connection with mushroom poisoning no mention is made of the possibility of symptoms being due to myceto-atropine.

There is no sharp line of division between toxicology and pharmacology. Much of interest and importance is to be found in this book for the daily need of physicians, pharmacists, and public health officials, as well as for its use in emergencies.

N.S.

SYMPOSIUM ON HISTAMINE

Ciba Foundation Symposium on Histamine. Edited by Dr. G. E. W. Wolstenholme. Pp. xvi+472. 133 illustrations. 50/- net. London: J. & A. Churchill Ltd. 1956.

Contents: Symposium of the Physiological and Pharmacological Societies at the Wellcome Foundation. Part I: Occurrence of histamine in the body. Chairman: W. Feldberg. Chairman's opening remarks. Distribution of histamine in the body by W. Feldberg. Histamine and mast cells by G. B. West. Histamine and intracellular particles by F. C. MacIntosh. Free and conjugated histamine by J. H. Gaddum. Short Communications: Histamine and mast cells by J. F. Riley. Action of 48/80 on the mast cell population and histamine content of the wall of the gastro-intestinal tract of the rat by I. Mota, W. T. Beraldo, A. G. Ferri and L. C. U. Junqueira. The isolation of imidazoleacetic acid riboside by

H. Tabor. Histaminergic action of blood serum by J. L. Parrot and C. Laborde. Inhibition of histidine decarboxylase *in vivo* by derivatives of benzyl-L-isoglutamine by J. L. Parrot and C. Laborde. Part II: Release of histamine. Chairman: F. C. MacIntosh. The mechanism of histamine release by W. D. M. Paton. Measurement of histamine-releasing activity by J. L. Mongar. Histamine release by long chain molecules by B. N. Halpern. Histamine release and anaphylaxis by W. E. Brocklehurst. Some discrepancies in the histamine theory of anaphylaxis in smooth muscle by D. F. Hawkins and L. M. Rosa. Part III: The origin and significance of histamine in the body. Chairman: Sir Henry Dale. The origin and fate of histamine in the body by R. W. Schayer. Histamine and gastric secretion by C. F. Code. Histamine and vasodilatation by R. F. Whelan. Histamine and nerves by U. S. von Euler. Skin histamine by W. L. M. Perry. The significance of histamine in the body by G. Kahlon. Short Communications: On the classification and nomenclature of amine oxidases by E. A. Zeller. Histamine in nerves by E. Werle. Histamine and gastric secretion by R. A. Gregory. The effect of sex hormones on histaminase by R. Kapeller-Adler. The action of histamine on the sympathetic nervous system by U. Trendelenburg. Histamine and vasodilator axon reflex of the skin by J. L. Parrot. Imidazoleacetic acid metabolism in bacteria by H. Tabor.

Symposium at the Ciba Foundation. Part I: The origin and fate of histamine in the body. Chairman: J. H. Gaddum. The origin of histamine in the body by J. H. Gaddum. Discussion: Blaschko, Code, Dale, Feldberg, Gaddum, Kahlon, McIntire, Mongar, Parrot, Paton, Rocha e Silva, Schayer, Schild, Tabor, Ungar, Werle, Zeller. The fate of histamine in the body by H. Tabor. Discussion: Blaschko, Code, Dale, Feldberg, Gaddum, Paton, Tabor, Werle, Wilson, Zeller. The fate of histamine in the body with particular reference to the enzymology of histamine oxidation by E. A. Zeller. Discussion: Blaschko, Gaddum, Kahlon, Kapeller-Adler, Parrot, Paton, Schayer, Schild, Tabor, Werle, Zeller. Is histaminase identical with diamine oxidase? by R. Kapeller-Adler. Discussion: Blaschko, Code, Dale, Feldberg, Gaddum, Kapeller-Adler, Mongar, Paton, Schayer, Tabor, Werle, Zeller. Part II: Location of histamine in the body, and mechanism of histamine release. Chairman: W. Feldberg. Remarks on the location of histamine in mammalian tissues by H. Blaschko. Discussion: Blaschko, Code, Dale, von Euler, Feldberg, Gaddum, Halpern, MacIntosh, Parrot, Paton, Perry, Reuse, Riley, Rocha e Silva, Schayer, Schild, Werle, Zeller. The location of histamine in the body by J. F. Riley. Discussion: Bein, Code, Dale, Feldberg, Halpern, Kahlon, MacIntosh, McIntire, Mongar, Paton, Parrot, Reuse, Riley, Rocha e Silva, Schachter, Ungar, Werle, West. The mechanism of histamine release by F. C. McIntire. Mechanism of histamine release by G. Ungar. Discussion: Bein, Code, Dale, Feldberg, Halpern, Humphrey, McIntire, Mongar, Perry, Riley, Rocha e Silva, Schachter, Schayer, Schild, Ungar, Werle, West, Zeller.

The lengthy summary of the contents of this book, given at the head of this review, shows at a glance what a distinguished group of workers from many countries were gathered in London last year to discuss the latest information on histamine. The many and varied papers submitted at the two symposia indicate the great interest in histamine, and research seems to have reached a point at which important advances in this field can be expected. Scientific workers throughout the world will be pleased to read this informative and stimulating record of our newer knowledge on the subject of histamine. Teachers of several of the medical sciences will be able to make much use of the material presented in this lucid and well-illustrated volume.

There is still much to be learnt about histamine. Our knowledge of the physiological and pathological function of the substance is incomplete. Its precise location within the mast cells remains to be definitely established. The way in which it is bound in the tissues has been explained in many theories. Further progress will depend on methods for estimating free and conjugated histamine in mixtures. The possible combination of histamine with heparin has been explored, since both substances are present in mast cells. Differences of opinion also exist about the mechanism of release of histamine, and here further studies on the human subject are desirable. Many drugs are believed to release histamine, which may account for certain of their pharmacological effects. That much experimental work still needs to be done is clear enough, and as a starting point for the young researcher, or for stimulation of those already engaged in this work, this information book will be most helpful.

N.S.

CONTROL OF TROPICAL DISEASES

The Control of Disease in the Tropics. By T. H. Davey and W. P. H. Lightbody. Pp. x+408+85 Illustrations. £2 7s. 6d. net. London: H. K. Lewis & Co. Ltd. 1956.

Contents: Preface. I. Economic and Social Aspects of Disease. II. Communicable Disease. III. General Measures of Communicable Disease Control. IV. Control of Community-wide Disease. V. Diseases Associated with Low Standard of Personal and Public Hygiene. VI. Diseases Associated with Low Standards of Personal and Public Hygiene (continued). VII. Diseases Associated with Low Standards of Personal and Public Hygiene (continued). VIII. Diseases Associated

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with Low Standards of Personal and Public Hygiene (continued). IX. Proximity and Contact Infections. X. Proximity and Contact Infections (continued). XI. Proximity and Contact Infections (continued). XII. Proximity and Contact Infections (continued). XIII. The House-fly. XIV. Insect-borne Infections. XV. Insect-borne Infections (continued). XVI. Insect-borne Infections (continued). XVII. Insect-borne Infections (continued). XVIII. Insect-borne Infections (continued). XIX. Insect-borne Infections (continued). XX. Insect-borne Infections (continued). XXI. Infections from Lower Animals. XXII. Infections from Lower Animals (continued). XXIII. Infections from Lower Animals (continued). XXIV. Welfare Services. XXV. Water Supplies. XXVI. Water Supplies (continued). XXVII. Disposal of Human and Animal Wastes. XXVIII. Disposal of Human and Animal Wastes (continued). XXIX. Village Housing. XXX. Food Requirements and Dietary Surveys. XXXI. Vital Statistics. Appendix. Index.

This new book, written by the Professorial Unit, is based on their lectures at the Liverpool School of Tropical Medicine. It covers the prevention and control of communicable diseases in the Tropics from a public-health point of view. Bearing the stamp of authority, it has an immediate local appeal. Two further characteristics widen the merit of the book:

1. Because tropical diseases are largely rural, it adopts the rural outlook rather than the urban point of view of the usual public-health text-book.

2. Devoid of clinical pretensions, it is not intended as an exhaustive reference book on tropical diseases, and thus only the really important diseases are included.

The diseases broadly fall into 4 big groups according to their mode of transmission, which is often the determining factor in their practical control: (1) Diseases associated with low standards of personal and public hygiene; (2) proximity and contact diseases; (3) insect-borne infections; and (4) infections from animals.

Each disease is separately considered—definition, geographical distribution, causative organism, epidemiology, diagnostic criteria and control measures. The fundamental preventive health-services required to deal with each group are well presented, and include child and maternal welfare, water supplies, disposal of human and animal wastes, flies, village housing, dietetics, and elementary vital statistics. Many valuable investigations are detailed in an appendix.

The fact that the book is not written from a strictly aetiological aspect leads to anomalies, e.g. Q fever and typhus—both rickettsial diseases—are included under different headings, the former under 'Infections from Lower Animals', the latter under 'Insect-borne Infections'. This however, does not detract from the great practical value of the book to the officer responsible for public health in the Tropics. Many of the subjects dealt with are applicable to our own 'platteland' towns. Hence this book should prove of real help to our rural part-time and full-time health-officers in South Africa.

H.R.A.

CHILD HEALTH AND WELFARE

Child Health and Development. Second Edition. By various Authors, edited by R. W. B. Ellis, O.B.E., M.A., M.D., F.R.C.P., F.R.S.E. Pp. x + 525, with illustrations. 42s. net. London: J. & A. Churchill Ltd. 1956.

Contents: List of Contributors. Preface. Introduction—R. W. B. Ellis. Part I. Development. Chapter I. Genetical Aspects of Child Health—F. A. E. Crew. II. Prenatal Development—I. Donald. III. The Newborn—J. W. Farquhar. IV. Digestion, Nutrition and Feeding—R. W. B. Ellis. V. The Establishment of Feeding Habits—A. Freud. VI. Development and Care of the Teeth—R. E. Rix. VII. Postnatal Growth—R. W. B. Ellis. VIII. Puberty and Adolescence—R. W. B. Ellis. IX. Intellectual Development—L. S. Penrose. X. Emotional and Instinctive Development—A. Freud. XI. Immunity—G. Payling Wright. Part II. Social Aspects of Child Health. XII. The Development of the Child Health Services—H. P. Tait. XIII. The Infant and Pre-school Child Health Services—H. P. Tait. XIV. The School Health Service—W. N. Boog Watson. XV. Care of the Under-privileged Child—H. P. Tait. XVI. Child Guidance—M. Creak. XVII. Vocational Guidance—D. McMahon. XVIII. Present Aims and Problems in Education—E. B. Castle. XIX. Health Education—R. Sutherland. XX. Punishment. XXI. Juvenile Courts—E. Youngusband. XXII. Child Health in the Tropics—R. W. B. Ellis. XXIII. Milk Production and Processing—E. A. Capstick. Appendices. Appendix I. Synopsis of Legislation—H. P. Tait. II. Normal Biological Values—M. S. Fraser. Index.

This book, compiled and edited by Prof. R. W. B. Ellis of Edinburgh with the assistance of a number of contributors highly distinguished in their special fields, is in some ways quite a remarkable work and the reasonable price represents excellent value.

The book is in no sense a text-book of paediatrics. Nevertheless, for undergraduates and more especially for postgraduate medical students specializing in paediatrics, for child-welfare medical officers and nursing sisters in Welfare work, for social workers, and for paediatric consultants in teaching units, this volume

contains a wealth of factual and essential information which otherwise would not be readily accessible without a tremendous amount of research and which is skillfully welded together into a very readable work.

The first part of the book is devoted to the development of the embryo, the infant and the young child and contains a great variety and wealth of detailed information about somatic growth and intellectual maturation patterns and standards.

The second part of the book gives a full and most interesting account of the history and functions of the Child Health and Welfare Services and the School Health Services; this section also contains a wealth of interesting and most stimulating information and opinion about the care of the under-privileged child, child guidance and vocational guidance, educational problems and health education, punishment and Juvenile Courts, and an interesting chapter on child health in the Tropics.

Although much of the historical and legislative information applies to the United Kingdom, this is no great disadvantage since, in many instances, similar legislation has been enacted in this country. Furthermore, frequent reference is made to American and Continental work and opinion.

This book is a veritable mine of information for a wide variety of workers, medical, non-medical and nursing, in the field of Child Health and Welfare, to whom the book is unreservedly recommended.

R.F.M.

CLINICAL PSYCHIATRY

Clinical Psychiatry. By Ian Skottowe, M.D., M.R.C.P., D.P.M. (Pp. 395 + X. 88.75.) London: McGraw-Hill Book Company, Inc. 1954.

Contents: Part 1. The principles of clinical psychiatry. 1. Introduction. 2. The Nature, Forms and Incidence of Mental Ill-Health. 3. The Factors Concerned in Mental Illness. 4. Psychiatric Case-Taking. 5. Principles of Treatment. Part 2. Clinical description of psychiatric disorders. 6. Affective Disorders. 7. Schizophrenic Disorders. 8. Paranoid Disorders. 9. Organic Psychiatric Disorders. 10. Obsessional Disorders. 11. Hysteria. 12. Disorders of Mental Development. 13. Psychopathic Personalities. 14. Psychiatric Disorders in Children. List of Key References and Guide for further reading. Index.

The subject matter of this book is founded largely on cases observed by the writer himself in St. John's Hospital and the Royal Buckinghamshire Hospital, Aylesley, England, where a special feature of out-patient treatment and domiciliary diagnosis and treatment has been made for many years. It is therefore a practical document and not only a theoretical treatise.

The book is intended primarily for general practitioners and for specialists in various branches of medicine who seek practical guidance in the many psychiatric problems which, as is now well recognized, they are likely to meet and encounter in their day-to-day work.

A.B.

CARDIAC SYMPTOMS IN THE NEUROSES

Cardiac Symptoms in the Neuroses. By Doris M. Baker, M.D., F.R.C.P. (London). Second Edition. Pp. 50 + viii, with 7 illustrations. 6s. 6d. London: H.K. Lewis & Co Ltd. 1955.

Contents: 1. Introductory. 2. Left Inframammary Pain. 3. Sighing Respiration. 4. Palpitation. 5. Conclusions and General Management. References.

The symptom complex consisting of left inframammary pain, palpitation, sighing respiration and exhaustion has been carefully studied by the author for many years and forms the subject of this small readable book. The title is purposely kept broad because she feels there is still no satisfactory designation for the syndrome. Nevertheless she feels that 'da Costa's Syndrome' is preferable to 'Neurocirculatory Asthenia', 'Effort Syndrome' or 'Irritable Heart'.

The great importance of the cardiac symptoms in the neuroses lies in the fact that they are frequently interpreted by the patient, and at times by the doctor, as indicative of organic disease of the heart. Thus the inframammary pain may simulate true angina, the sighing respiration true dyspnoea, and sinus tachycardia or ectopic beats a more serious arrhythmia. The points of differentia-

tion between these symptoms as well as their significance are so well known that the book has little new to offer. Nevertheless, the careful description of the symptoms in a large number of cases gives the reader a clear insight into the symptomatology. And herein lies the chief merit of the monograph, for no doctor can practice sound medicine without a clear knowledge of the syndrome.

However, the discussion on the mechanism of production of the symptoms is disappointing for there is nothing new added and no mention of the role of hyperventilation *per se* in the production of giddiness, shakiness, mental confusion and apprehension, palpitation etc. Furthermore, there is little offered to guide one in the management of the condition.

L.V.

RADIOTHERAPY

British Practice in Radiotherapy. Under the General Editorship of Sir Ernest Rock Carling, LL.D., F.R.C.S., F.R.C.P., F.F.R., B. W. Windeyer, M.B., B.S., D.Sc., F.R.C.S., F.R.A.C.S., F.F.R. and D. W. Smithers, M.D., F.R.C.P., F.F.R. Pp. xii + 516 + (32). 142 Figures. 85s. + 2s. delivery. London: Butterworth & Co. (Publishers) Ltd. South African Office: Butterworth & Co. (Africa) Limited, P.O. Box 792, Durban. 1955.

Contents: Part I. General Problems in Radiotherapy. Dosage and Measurements. Biophysical Basis. Clinical Basis for the Choice of Treatment. Methods of Radiotherapy. Safety and Protection. Work of the Radiographer. Part II. Treatment. Cancer of the Breast. Malignant Tumours of the Ovary. Cancer of the Uterus, Cervix and Body. Diseases of the Vagina, Urethra and Vulva. Carcinoma of the Penis. Tumours of the Testicle. Tumours of the Nose and Nasal Sinuses. Tumours of the Pharynx and Tonsillar Fossa. Carcinoma of the Larynx. Carcinoma of the Bronchus. Mouth Tongue and Lip. Carcinoma of the Oesophagus and Stomach. Carcinoma of the Rectum and Anal Canal. Tumours of the Kidney and Bladder. Tumours of the Brain and Spinal Cord. Diseases of the Eye. Tumours of the Thymus. Cancer of the Thyroid Gland. Treatment of Thyrotoxicosis by Radio-iodine. Cancer of the Skin. Tumours of Bone and Soft Tissue. Reticulosis and Reticulosarcoma. Malignant Disease in Children. Radiotherapy in some non-malignant Conditions. Records and Presentation of Result. Index.

In as far as the contributors have been drawn from most of the major British Radiotherapeutic Institutions or Departments this volume truly reflects current British Radiotherapeutic practice. One feels however that the size of the book does not befit the title and that the subject-matter could more reasonably and more profitably have occupied two or three volumes of similar size. In its present form it appeared more like a companion volume to British Surgical Practice than a text-book such as one would like to see under this title.

Despite the fact that there are so many contributors the book is so delightfully written and produced that one does not really sense the changes in authorship as one courses from section to section. Another tribute to the contributors lies in the way they

have encompassed such a vast amount of knowledge into 515 pages.

Part I of the work opens on a high note with an excellent review of the development of dosimetry in radiotherapy. The theme of this part is then developed with equal prowess by physicists and other of similar calibre. From here the theme assumes its more clinical nature in chapters appropriately written by radiotherapists of high standing.

Part II is given over almost entirely to the treatment of malignant conditions. There is a small chapter on the treatment of thyrotoxicosis by radio-iodine. Somewhat scant attention is paid to the treatment of non-malignant conditions and the work terminates with a chapter on Records and the presentation of Results.

The subdivisions of this part follow the classical lines depending largely on the primary site of the cancer. In almost every instance these 23 subdivisions are discussed by a radiotherapist in collaboration with a surgeon or physician. This procedure has added very considerably to the value of the work, which should be on every radiotherapist's shelf.

J.M.G.

Radiotherapy

The section on radiation therapy maintains the high standard of previous years in abstracting of radiotherapeutic articles published during the past year.

The trend at present is towards the use of supervoltage apparatus, and a number of the abstracts deal with this aspect, mainly on the physical side, but it is noted that the results are disappointing, although comparable 5-year survival figures are not yet available. There are a number of articles on rotation therapy, also mostly from the physical aspect, the only clinical data quoted indicating that this method of treatment may have some advantage over standard 250 K.V. therapy, particularly in treatment of intrathoracic lesions.

One article of particular interest to practising radiotherapists, is a report on the response to treatment of liposarcomata by X-rays. This should encourage the treatment of these tumours, especially metastases. The reviewer has recently treated secondary deposits in the scapula from a liposarcoma with a remarkable response.

A review of 1,070 incapacitated cardiac patients treated with radio-active iodine from several clinics, indicates the satisfactory results which may be obtained by this method without risk or complications. This has been the experience of the reviewer and his associates in the treatment of some 80 cases of angina.

This is an excellent reference book and should be of particular interest not only to radiotherapists, but also to physicists and clinicians dealing with malignant disease.

A.J.H.H.

CORRESPONDENCE : BRIEWERUBRIEK

DISTINGUISHED OVERSEAS VISITORS

To the Editor: The larger centres are fortunate in that from time to time leading figures in various fields of medicine have been induced to pay them a visit. With these visits go much edification and the stimulation that originates anew with every contact. The fruitful results of these visits must be a source of extreme gratification to their organizers, who might well be induced to invite other Branches of the Association to offer their hospitality as well. It would be a remarkably fine gesture on their part if they made it possible for the profession in other parts of the country to share, to some extent, in the benefits to be gained from these visits.

In the same way, when Groups within the Association have scientific meetings in various parts of the country, an invitation extended to the practitioners in the area is always appreciated.

69 Cape Road
Port Elizabeth
12 November 1956

P. Jakbovitz
Hon. Secretary
Cape Midland Branch

INCLUSIVE FEES FOR SPECIALIST SURGEONS

To the Editor: General practitioners should bear in mind that once a medical aid case or a W.C.A. case has been referred to a specialist for operation, the post-operative treatment is included in the fee of the specialist. No medical aid society or the W.C.A. Commissioner will pay for any post-operative consultations or visits by the general practitioner.

If the specialist desires the general practitioner to visit the patient after his return home, the specialist renders himself liable for the fees of the general practitioner.

Recently several general practitioners have approached me concerning non-payment of their fees under such circumstances.

L. O. Vercueil

Chairman Central Committee for Contract Practice.
Convenor W. C. A. Committee.

106 Conrad Street
Florida
11 November 1956